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Two Faces

WITHIN the higher echelons of the ECA new problems appear which in many respects overshadow the earlier problems of Congressional consent, proper distribution and adequate supply. The earlier and more imperative demands for food and raw materials were probably exaggerated. In any event urgent relief is no longer a problem.

The nations of Western Europe now receiving American aid are, almost without exception, ahead of their prewar levels of economic activity. Yet here are 5.4 billions in dollar funds which in a little more than a year must be spent constructively. The managers of ECA know that they will ultimately be requested to account for these funds and that the accounting mandate will extend to the President and the Congress which approved this vast grant.

On the one hand, they cannot permit these great sums to be dissipated by the recipients in socialist ventures or the competitive duplication of costly capital facilities. On the other hand, they must not promote an economic Frankenstein likely to devour or injure his creator.

Consider this in detail. Prior to the war the countries of Western Europe carried on a substantial trade with Poland, Czechoslovakia, Hungary, Rumania and Bulgaria. Economically such traffic was logical. With the westward advance of the Iron Curtain this intercourse was suspended. Many students believe that this trade between the East and the West is essential to the development of a viable Western European economy. Without it Europe must send its surplus to America or become a chronic pensioner.

Question: Should ECA funds be used to promote trade between the satellite countries and the democracies of Western Europe? What will be the reaction of the American public when it learns that taxes which it paid have been used to buttress the economies of Cominform members, even if this appears necessary for the economic health of friendly powers?

Suppose American equipment under the ECA program finds its way to Poland via England, that the English in return receive Polish ham and that this occurs at a time when American pork is a drug on the market?

The change from sellers' to buyers' markets throughout the world has greatly aggravated the problem of international trade. What we are able and willing to accept from Europe in the form of merchandise to pay for her own purchases from us will rapidly become a thorny problem. One of the most dependable and least objectionable sources of dollar supply is American tourist expenditure. Should the ECA encourage the use of American funds for construction of hotels and resorts which will enable Europe to entertain more Americans more profitably? What response may we expect from the owners of our own dude ranches, summer camps and vacation spots when the picking becomes thinner?

The supervision of ECA funds calls for the "economic integration of Western Europe." If we play that over a couple of times to catch the underlying refrain, it appears as economic planning and economic control. Isn't this precisely the thing that America is seeking to avoid at home and oppose abroad?

Aid for Europe thus reveals a Jekyll-Hyde character in which measures which show economic merit in one role, reappear as political dynamite in another.

Joseph Stagg Lawrence

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METALLURGY SALES OPERATIONS

IRON AGE — NEWSFRONT

May 17, 1949

► For a long time at least steel capacity is adequate to meet total consumer demand. This condition takes steel leaders off the hook—whether or not government experts agree. Before the year is out the steel capacity question will be academic, confined to Washington.

► Raw materials for steelmaking are now abundant. Coal stocks are big. Even a strike will not hurt much for several weeks. The scrap shortage is history. Ore can be had from Canada and South America when wanted. Most steel firms are not worried over manganese. War, which seems unlikely, could upset the apple cart, but even then steel would not be the biggest bottleneck.

► Bethlehem Steel hopes to have iron ore coming from a new field in Chile within the next 3 years. Shipments will be about 1 million tons a year. Ore from Venezuela is expected anytime, although it may be the first of next year before Bethlehem brings in representative tonnages from its new field there.

► Rapid techniques for cleaning bearings and other intricate parts through the use of high pressure sprays have been developed. Pressures from 75 to 120 psi have been found to dissolve, loosen and carry away grime on the parts in about half the time required with the 40 psi pressures previously used. No damage to parts has been observed.

► A diesel electric power shovel has recently been developed which permits the working of new mines or fields in which regular high voltage electric current is not available or satisfactory. An electro magnetic clutch driven directly by the diesel is used for hoisting and digging. A generator driven by the diesel supplies current to two dc motors which power the rest of the shovel motion.

► Recent cutbacks in zinc and lead production have increased the scarcity of cadmium. The greater demand for the metal from the automobile industry and other electroplating has not helped to alleviate the shortage.

► Efficiency in handling a variety of materials where plant operations are spread over a considerable area is made difficult by the problem of locating the proper handling equipment and getting it on the job site quickly. At one plant this problem was solved with a 2-way radio system, which cut handling costs 15 pct, reduced idle time in transport department 70 pct and doubled work done by each vehicle.

► It is now a definite possibility that some unwanted steel ingots originally purchased at prices as high as $120 per ton for conversion will wind up as scrap. In some cases settlements have already been made between the steel user and the mill.

Scrap dealers who often did rather well when scrap prices were climbing now find the shoe on the other foot. To make matters worse, many dealers with industrial contracts and no home for their scrap were required, under their contracts, to take a higher volume of scrap in April than in March. One reason: Plants were scrapping small pieces of steel they might have used for small stampings.

► Production of soil pipe by centrifugal casting methods promises important changes in the industry's manufacturing techniques. Several new machines have been placed on the market recently. Another is in the development stage. This type of equipment is said to effect important savings in labor, plant space and greatly increased production rates.

► At a turning test on a 50 hp Monarch test lathe using a pressed carbide tool a demonstration of 1650 sfpm cutting speed was made. Feed was 0.015 in. per revolution, depth of cut was 5/16 in. and metal removed was 140 cu in. per min on SAE 1050 steel. Total loading of the machine was 84 hp. This was not a production job but a demonstration of fast metal removal and was done without a coolant.

► A 90-stage turbine for driving rotary tool bits is now being tested in an Oklahoma oil well. These turbo drills are driven by the flow of mud pumped through the well. Thus the whole drill pipe string need not revolve to actuate the tool bits. The rotor wheels at present consist of a precision cast alloy of the 4130 type.

► Such a good job has been done on rehabilitating the steel industry in Europe that steel from the U. S. may soon have a tough time competing. Domestic firms which were forced to let their export contacts slip because of conditions of the time are actively seeking foreign steel orders.

Ultrasonic

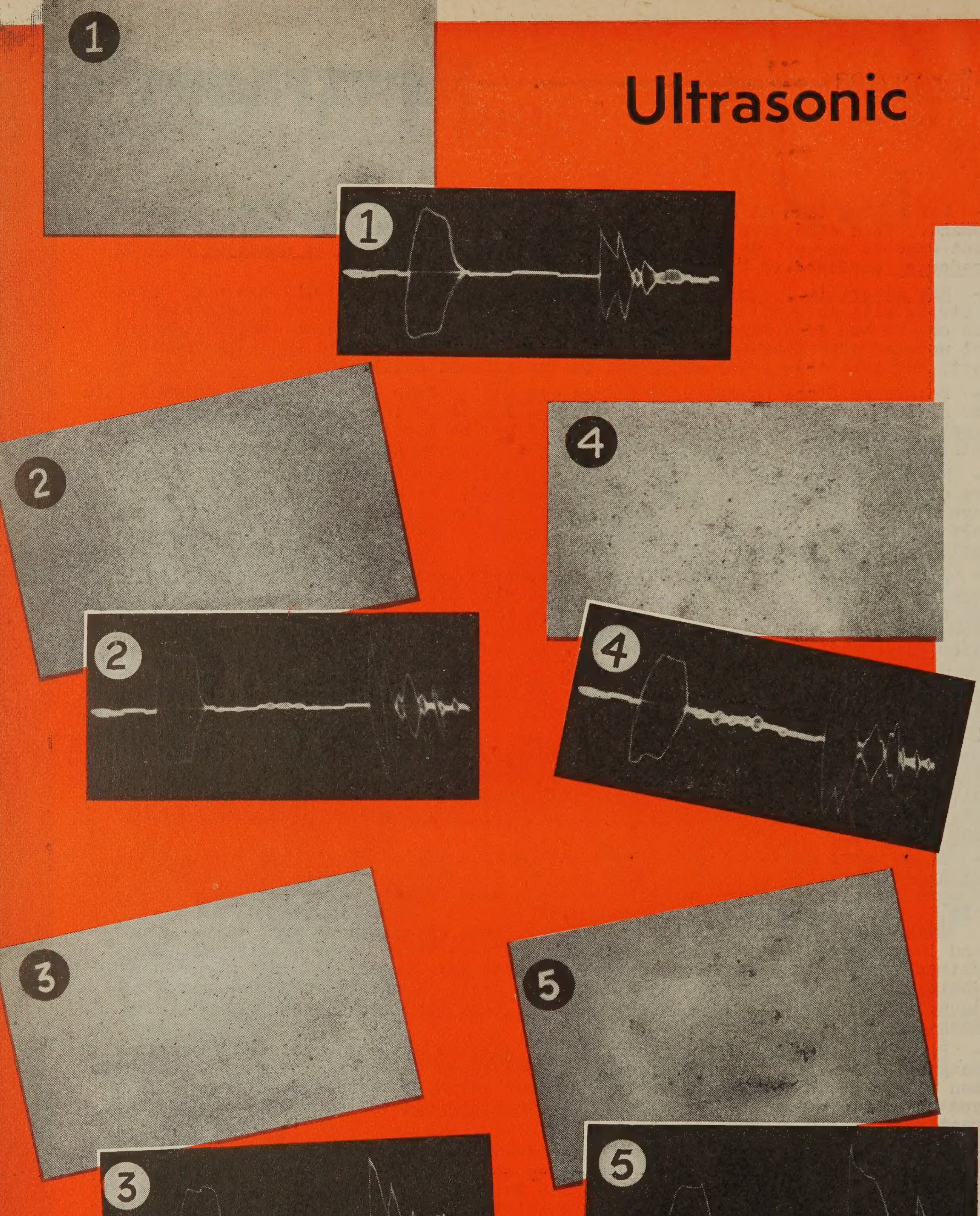

FIG. 1—Five samples, varying in degree of segregation from an amount barely discernible in sample 1 to very heavy segregation in sample 5, were used to determine whether or not the Reflectoscope would delineate segregate and differentiate among varying degrees of segregation. Macroetched sections of the samples, actual size, are shown along with reflectograms, taken with a standard sensitivity, for each sample.

Testing of Tool Steels

By JAMES C. HARTLEY
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An investigation which demonstrated the ability of ultrasonic testing to delineate segregation in high speed steels and which indicated that the Reflectoscope can differentiate between mechanical defects and segregation is reported by the author. The feasibility of checking heat treatments by successive reflection counts is also discussed.

HIGH speed steels inherently lend themselves well to ultrasonic testing because: (1) The basic cost of the product is sufficiently high to warrant the expenditure necessary to determine and, where practicable, to guarantee the ultimate quality of the product; (2) tool steels are usually supplied with surface conditions adequate for satisfactory ultrasonic testing, and (3) end use of the tool steel ordinarily involves expensive processing which more than justifies any cost of pretesting to insure satisfactory quality. For example, a number of large broaches are used in industry. These involve high costs in machining, heat treating, honing and finishing. The cost of ultrasonic testing would be more than justified if in an early stage of manufacture it revealed a bad center or other condition which would render the steel unfit for the intended application. Pretesting of this type can effect large savings both in time and money.

There are, however, a number of problems in connection with the ultrasonic testing of tool steels which do not ordinarily arise in the testing of carbon or low alloy steels, for materials with the complex chemistry of high speed steels do not permit the simple interpretations involved in the testing of plain carbon or low alloy steels.

It has been stated that ultrasonic testing of tool steels is impracticable because the Reflectoscope reveals segregate as well as mechanical defects. One of the primary purposes of the present investigation was to determine whether or not this claim was true.

The tests conducted in connection with this investigation indicate that the Reflectoscope will reveal segregate in highly alloyed tool steels. The results also show that by the use of proper comparison standards, it is possible not only to differentiate between segregate and mechanical defects or discontinuities but also to indicate the degree of segregation in a particular piece. Proper interpretation of such data might well eliminate the tedious and costly procedure of cutting etch disks to determine the degree and extent of segregation.

Outline of Tests

The following series of tests was undertaken to determine the applicability of the ultrasonic method to tool steels:

Test 1: A series of tests to determine the degree of segregation in 5 samples of high speed steel billets, and to correlate these results with macroetches on the same pieces.

Test 2: Tests to differentiate between the segregation in high speed steel and discontinuities or mechanical defects.

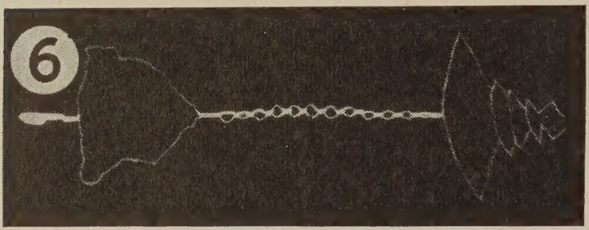
Test 3: Tests to differentiate among various heat treatments on samples of high speed steel by means of successive reflection counts.

Results of the above tests can be summarized as follows:

Test 1: The degree of segregation in high speed steel billets has been correlated with etch tests and it has been shown that the Reflectoscope can delineate segregation at least as sharply as etch methods.

Test 2: The Reflectoscope can differentiate between mechanical defects and segregation at least within the range of defect sizes tested.

Test 3: The microstructure and heat treatment of high speed steel appears to have considerable effect upon ability to transmit ultrasonic impulses, and it is indicated that checking heat treatment of high speed steel by a successive reflection count is feasible.



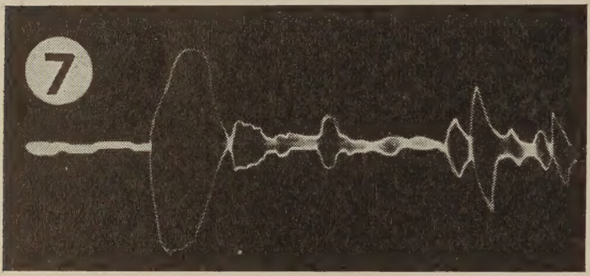


FIG. 2—Reflectograms 6 and 7 of sample billets 1 and 5, respectively, taken with the instrument set at a sensitivity high enough to reveal the segregation in billet 1. Compare with reflectograms 1 and 5 in fig. 1.

Methods of Testing

The operation of the Reflectoscope has been described in sufficient detail in prior articles (see references) to make a repetition unwarranted.

A standard type SR03 Reflectoscope (Sperry Products, Inc.) was employed in the tests outlined above, utilizing frequencies of 2¼ and 5 megacycles at the sensitivity or gain setting indicated.

In test 1, to determine whether or not the Reflectoscope would delineate segregate and differentiate among varying degrees of segregation, 5 samples of annealed 18-4-1 high speed steel were employed. These sections were approximately 5 in. square x 2 in. thick. Macroetch tests had revealed the existence of varying degrees of segregation ranging from an amount barely discernible in sample 1 to very heavy segregation in sample 5. These samples along with the reflectogram for each are shown in fig. 1. The procedure was as follows:

Sample 1 was scanned through one 5 in. dimension at both 2¼ and 5 megacycles. It was found that a high sensitivity setting at 2¼ megacycles would reveal a certain amount of segregation, although the etch showed nothing significant. The sensitivity or gain of the instrument was then cut back to a point where no indication was obtained on the oscilloscope screen from the segregate in the sample. This setting will be called reference standard No. 1 hereinafter. The reflectogram obtained on the sample at this setting is shown alongside the sample in fig. 1.

The other 4 samples were then scanned in a similar manner using the reference standard setting. Reflectograms of the indications were taken and are shown in fig. 1. These reflectograms when compared with the etch tests would seem to indicate that the Reflectoscope can differentiate more sharply among varying degrees of segregation than the standard etch test. In evaluating segregate in high speed steel, it is necessary to provide a standard sample having satisfactory segregation characteristics but which are of a borderline nature. If the sensitivity of the Reflectoscope is now adjusted to the point where this borderline segregation is not revealed, then other samples tested at this sensitivity, which show indications, can be considered as unsatisfactory and either rejected or subjected to further working in order to reduce the degree of segregation. It is advisable to provide standards in several size ranges and apply the one whose section corresponds most closely to the work being tested.

It should be emphasized at this point that the sensitivity settings are not constant. In other words, one cannot preset the knobs and push a switch and expect to obtain reproducible readings day after day. The standard samples must be checked several times daily in order that indications be subject to consistent interpretation.

Discussion of Data

Referring to fig. 1, the reflectogram of billet 1 reveals no visible indications on the oscilloscope screen at the gain setting indicated for the billet, using the standard reference setting for determining the degree of segregation in the five samples in question. It might well be, however, that sample 3, to take an example, would be satisfactory from the standpoint of segregation, in which case the gain setting would be reduced to a point where no indications appeared on the screen when sample 3 was under test. Reflectograms 2 to 5 show the type and magnitude of indications obtained with the other billets, and can be correlated with the corresponding etch tests. Reflectograms 6 and 7 in fig. 2 show billets 1 and 5, respectively, with the instrument gain set high enough to reveal segregation in billet 1. Comparison of reflectogram 5 with reflectogram 7 will illustrate the difference in indications obtainable

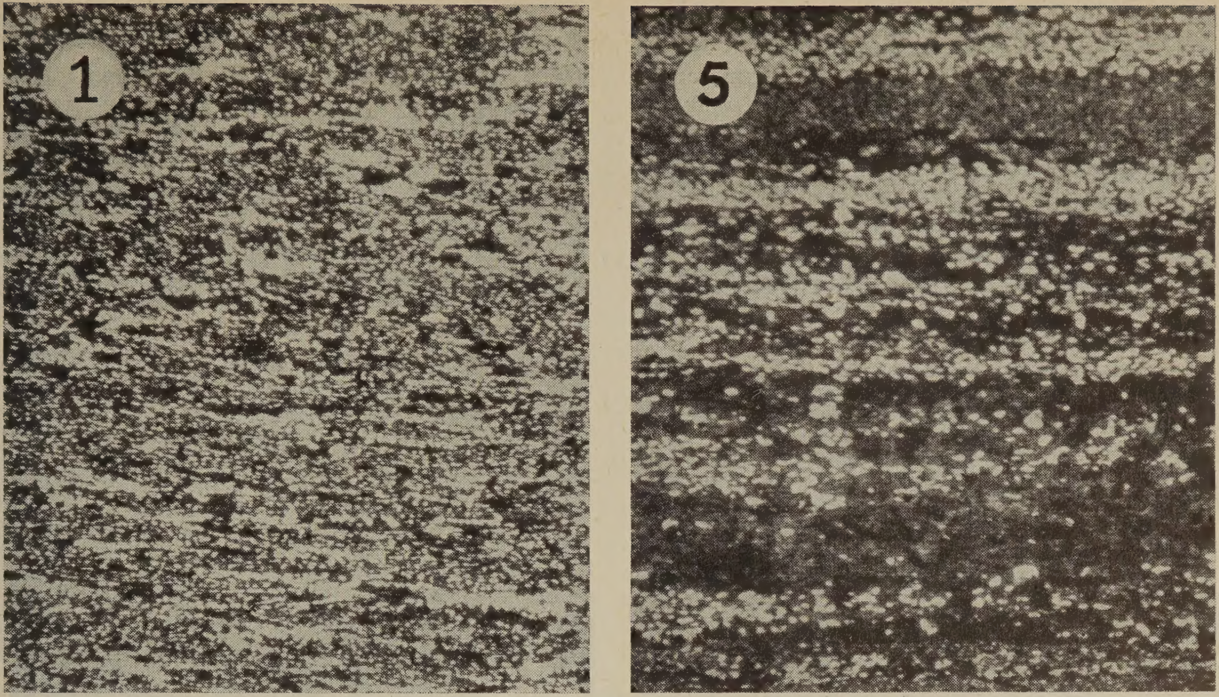


FIG. 3—Microstructures of billets 1 and 5 used in obtaining the reflectograms in fig. 2. 75X. Etchant, 2 pct Nital.

at different gain settings. In every case the reflectogram indications represent the worst condition across the section tested. Microstructures of billets 1 and 5 are shown for comparison in fig. 3.

In order to determine whether the Reflectoscope would differentiate between actual mechanical defects and segregation as proposed in test 2, a sample having a fine crack or forging burst in the center was investigated. The sample, along with reflectograms 8 and 9, indicating the effect of this crack, are shown in fig. 4. In reflectogram 8, the sensitivity was reduced to a point where no indications were obtained on billet 5, the sample showing the highest degree of segregate. It will be noted that the reflectogram clearly shows a center defect indicative of the forging crack. Reflectogram 9 was made at a sensitivity setting equivalent to the reference standard wherein no indications were obtained on billet 1. There the crack indications can be seen greatly enlarged over the previous reflectogram and with segregation in the piece also showing as a background effect.

A study was made of the effect of heat treatment upon the transmissibility of ultrasonic impulses in high speed steels. For this investigation a forged high speed steel ring was used. The ring was 7 in. OD x 4 in. ID x 3 in. thick. Before testing the ring was annealed and the opposite faces were turned to a smooth finish. Since the ring had been mandrel forged and had received

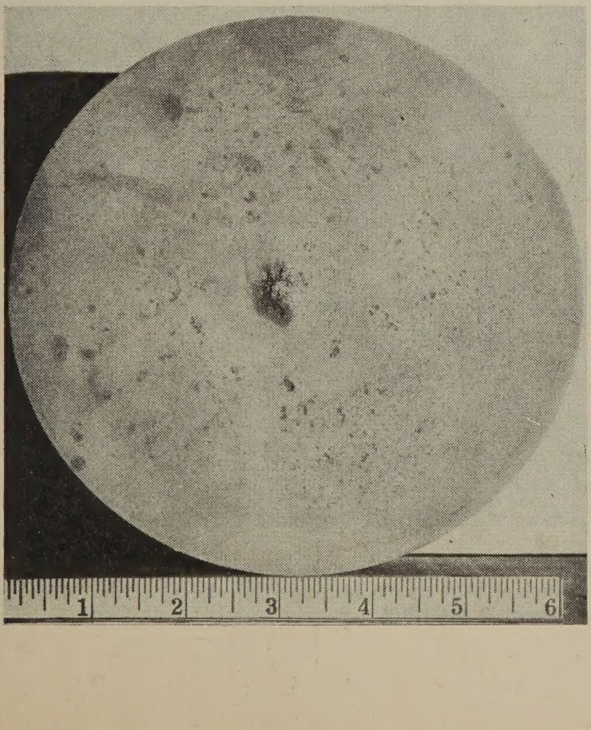
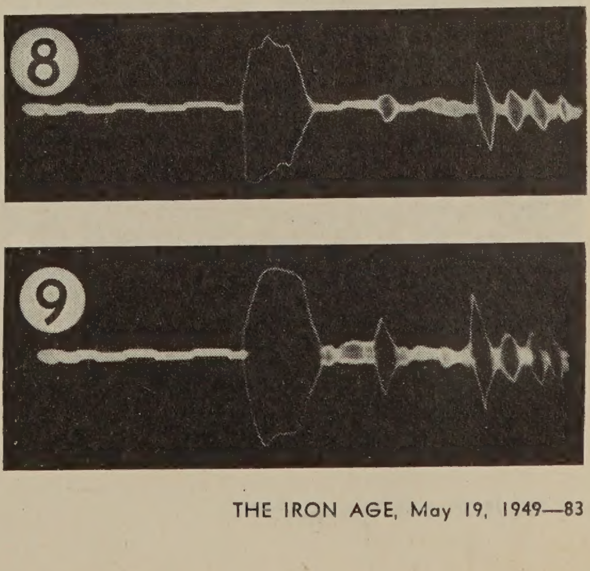


FIG. 4—To establish the reflectoscope's ability to differentiate between mechanical defects and segregation, the sample shown, having a forging burst in the center, was investigated. Reflectograms 8 and 9, taken at different sensitivities, show the defect clearly. Reflectogram 9, using a higher sensitivity, also shows segregation as a background effect.



a large amount of upset work as well as mandrelling, it can be assumed that the structure represents a thoroughly-worked, fine-grained material and that any inherent segregation from the ingot would be completely broken up. Four sections approximately 3 in. long were cut from the ring and subjected to the following treatments:

Section I was heated to 2100°F for 15 min, quenched in oil and double-tempered at 1075°F. Hardness, Rc 60.

Section II was retained in the annealed condition. Hardness, Rc 21.

Section III was heated to 2500°F for 15 min, quenched in oil and double-tempered at 1075°F. Hardness, Rc 64.

Section IV was heated at 2350°F for 15 min, quenched in oil and double-tempered at 1075°F. Hardness, Rc 63.

All samples were tempered together.

Typical microstructures of these sections, at 500X, are shown in fig. 5. Section I represents an underheated condition with the carbides only partially dissolved and in a transition state. Section II represents the annealed condition with all the carbides out of solution and a fully ferritic matrix. Section III represents a maximum solution of carbide with coalescence of undissolved carbides and unrestrained grain growth. There is no evidence of peritectic fusion or oxidation products in the grain boundaries. This sample can be said to represent overheated, but not burned, high speed steel. Section IV represents correctly-treated high speed steel with the carbides small and well-distributed. The double-tempering operation should result in a minimum of retained austenite.

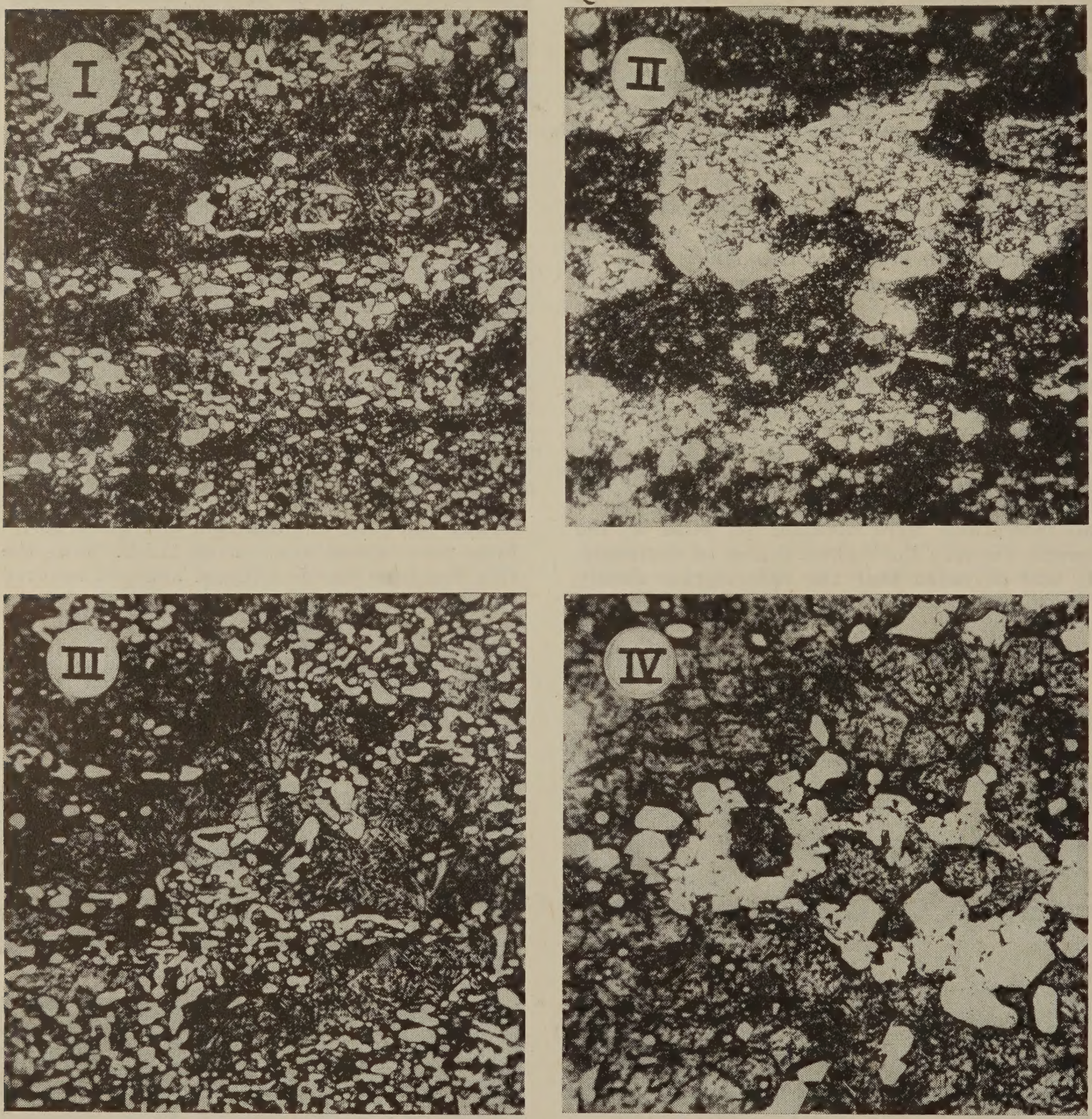


FIG. 5—In studying effects of heat treatment on transmissability of impulses, four sections from a forged high speed steel ring were used. Photomicrographs of the sections after different heat treatments, show the variety of structures obtained and tested. 500X. Etchant, 2 pct Nital.

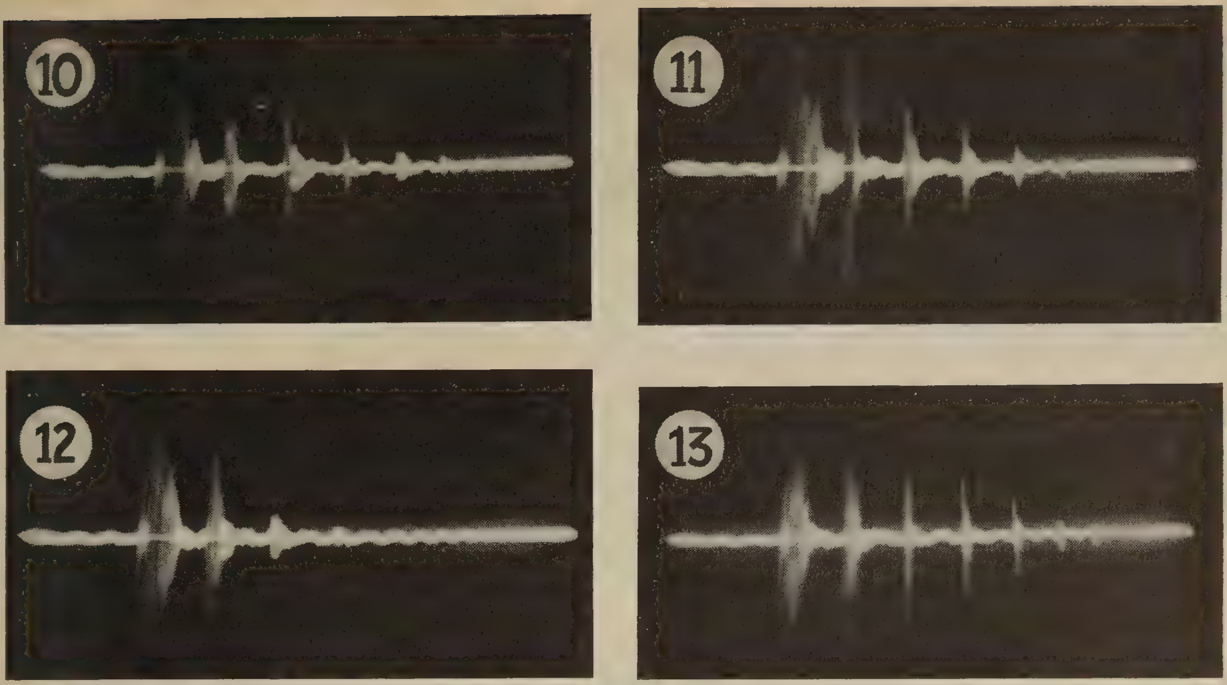


FIG. 6—Reflectograms of the four ring sections in fig. 5 demonstrate the effect of microstructure on transmissability.

After heat treatment, all samples were ground on one end to provide optimum ultrasonic transmission.

The first series of tests were conducted at 5 megacycles using a 1-in. crystal and with the sweep contracted to permit a successive reflection count. Reflectograms 10, 11, 12 and 13, in fig. 6, were taken of the four ring sections.

Reflectogram 10, representing section I, the underheated metal, shows a rather rapid decrease in reflection amplitude and a sharp falling off in reflection count. Actually 5 possible reflections are observable although it would have been more accurate to consider this as a fourth successive reflection count.

Reflectogram 11 of section II, the annealed material, shows a much greater amplitude of successive reflections and a more symmetrical amplitude loss. Again, calling this a fourth reflection count, although the fifth reflection is again discernible, is justified,

Reflectogram 12 of section III, the overheated piece, shows a high amplitude on the first reflection and an almost complete loss of transmission thereafter. This can be considered as a second reflection count.

Reflectogram 13 showing section IV, the correctly heat treated piece, shows a high degree of amplitude retention and a back reflection count of 6, with a much more symmetrical pattern of amplitude decrease.

It can be inferred from these studies that the microstructure of a sample of high speed steel contributes very greatly to its ability to transmit ultrasonic impulses.

In order to observe the effect of ultrasonic reflection upon the transmissibility of samples subjected to the above heat treating variables, the tests were repeated at 2¼ and 1 megacycles.

Similar pattern effects were obtained at 2¼ megacycles although effect of overheating was not so marked as in the tests at higher frequency, and at 2¼ megacycles the annealed sample appeared to have lower transmissibility.

In testing at one megacycle no readily discernible pattern was evident, and it would seem that the most significant information was obtained at the higher frequencies. In fact, there is justification for the belief that more sharply delineated results might be obtained at 8 to 10 megacycles.

REFERENCES

F. A. Firestone, "Supersonic Testing," 1948 Metals Handbook, Amer. Soc. for Metals.

J. V. Russell and H. E. Pellett, "Supersonic Testing in a Steel Plant," THE IRON AGE, Jan. 31, 1946.

R. B. Delano, Jr., "Supersonic Flaw Detector," *Electronics*, Jan. 1946.

F. A. Firestone and J. R. Frederick, "Refinements in Supersonic Reflectoscopy," J. of Acoustical Soc. of America, July 1946.

Vincent Carlin, "Supersonic Inspection of Materials," *Product Engineering*, March 1947.

J. C. Smack, "Inspection of Forged Axles," *Automotive & Aviation Journal*, Nov. 15, 1945.

E. O. Dixon, "Electronic Methods of Inspection," Amer. Soc. for Metals series.

E. N. Simons, "The Supersonic Flaw Detector," *Metal Progress*, Sept. 1945.

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Evolution of the Reversing

BACK in those halcyon years 1926-27, the attention of the steel industry was focused on Butler, Pa., where Naugle and Townsend [Columbia Steel Co., later (1927) bought by Armco] demonstrated a successful continuous multi-stand hot strip-sheet mill, and on Ashland, Ky., where Armco proudly initiated commercial production on such a mill. The smell of revolution in steel rolling practice was in the air. Elsewhere other inventors, primarily Abram P. Steckel in Youngstown, Ohio, were barely noticed as they preached the gospel of obtaining hot-rolled sheet-width coils by breaking down slabs in a single-stand reversing mill flanked by upcoilers in furnaces.

Admittedly such a single-stand unit would have far less capacity than the multi-stand, and the steel surface might well suffer through use of the same rolls for roughing and finishing. But, looming large on the credit side, were the reversing mills' far smaller capital cost and obvious flexibility for handling miscellaneous jobbing orders.

It was the multi-stand continuous mill, however, which became the darling of the large integrated steel mills all through the trough of the depression. Such prodigious producers were they that there was plenty of overflow of hot coils to smaller, non-integrated producers, usually at a price almost of subsidy proportions. The idea of a single-stand unit fell on thorny ground, and all through the 1930's the Cold Metal Process Co., Youngstown, was only able fitfully to push a reversing unit up through the onrushing flood of continuous mill installations.

But, today, a whole new set of economic variables beset the steel industry. The capital outlay required for a continuous train of roll stands is just about overpowering. The smaller non-integrated producer has none of his old assurance that his bigger neighbor will continue to supply him with hot coils at a price permitting survival when the competitive going gets sticky. Constantly rising freight rates and a slow and steady decentralization of steel consumption both encourage the idea of smaller and more scattered productive units.

To many a producer the single-stand reversing hot strip-sheet mill offers the best hope of rationalizing his way out of this frustrating labyrinth. For instance, Crucible Steel Co. of America has just started production in its new ultra-modern $18,000,000 addition at Midland, Pa., for rolling alloy steel. This installation is unique in that the key unit is a 66-in. wide, single-stand reversing hot strip-sheet mill. Other companies are installing or ordering comparable mills, and the entire picture now looks about as follows:

Mills in Operation (Past and Present)

Youngstown Sheet & Tube Co., Brier Hill, 1931-32. Four-high, 36-in. Steckel unit. Later, a 2-high plate mill was operated for a short period experimentally as a Steckel mill at the Campbell Works. Then the 4-high Brier Hill unit was moved to Indiana Harbor and operated very successfully, employing an old Mackintosh Universal mill as a primary rougher.

Dominion Foundries & Steel, Ltd., Hamilton, Canada, 1934-35. Former 4-high Youngstown Steckel unit moved from Indiana Harbor and still in operation.

McLouth Steel Corp., Detroit, 1936. Two-high, 20-in. Steckel mill, still in operation.

Hoesch Koln Neuessen A.G., Dortmund, Germany, 1940-41. Four-high, 50-in. Steckel unit, still in operation.

Altos Hornos de Mexico S.A., Monclova, Coahuila, Mexico, 1944. Two-high, 48-in. unit converted from original Mackintosh Universal mill which had been used as primary rougher at Indiana Harbor by Youngstown.

Crucible Steel Co. of America, Midland, Pa., 1949. Four-high, 66-in. Steckel-type mill just placed in operation.

Mills Building or in Prospect

McLouth Steel Corp., Detroit. Four-high, 44-in. unit being built by Mesta and scheduled for completion in the early Fall.

A. M. Byers Co., Pittsburgh. Two-high, 40-in. unit of special design and manufactured by Mackintosh-Hemphill Co., and scheduled for completion about July.

Newport Steel Corp. (International Detrola Corp.) (formerly Andrews Steel Co.), Wilder, Ky. Four-high, 66-in. unit assembled from used equipment. Has been undergoing trial runs for a month but is down for minor alterations.

(Arbed) Acieries Reunies de Burbac-Eich-Dude-

Hot Strip Mill

° ° °

By T. W. LIPPERT
Directing Editor
THE IRON AGE

° ° °

lange, Luxembourg. Four-high, 66-in. unit, under construction by United Engineering & Foundry Co.

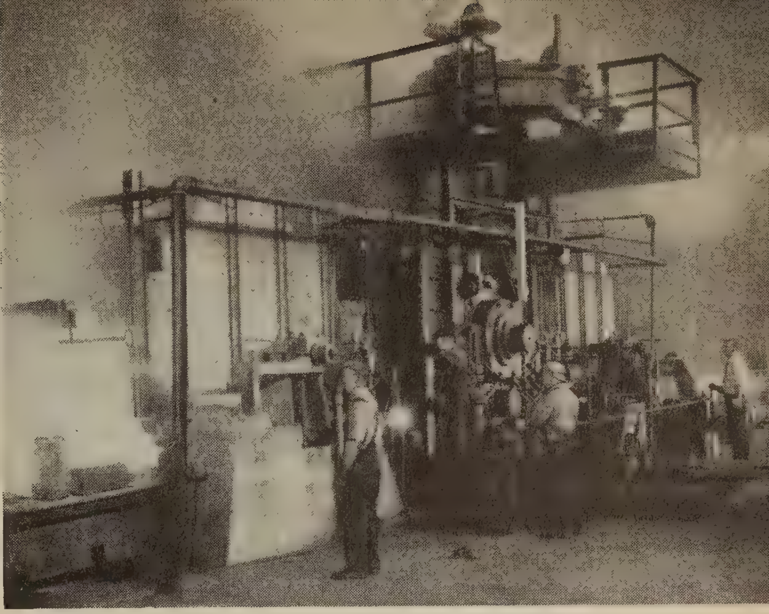
Cia. Siderurgica Belgo Mineira, Monlevade, Brazil. Two-high, 31½-in. unit of special design and constructed by Mackintosh-Hemphill Corp. Now in transit to Brazil.

Societe Anonyme des Acieries & Forges de Firminy, Firminy, France. Four-high, 40 in.-wide unit first constructed with reels but without furnaces. Now being rebuilt to have reels inside furnaces.

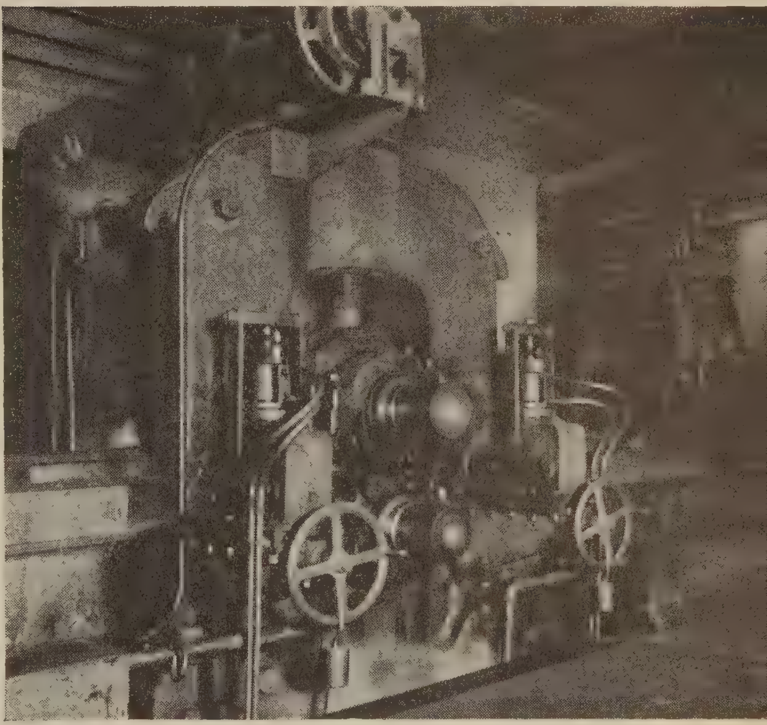
Quite obviously all this construction of single-stand reversing hot sheet mills marks a definite transition from a curiosity to a standard productive practice. The period of gestation has been some 20 years.

Although the idea first germinated in the brain of Wilmot in 1892, or thereabouts, Mr. Steckel first proposed the outline of a commercial reversing hot strip mill around 1926, or possibly earlier. His first patent application was filed in 1927, and about the same time Keeney and Ferm were issued a similar patent, later assigned to Cold Metal Process Co. Keeney was manager of the Midland plant of Crucible Steel, and Ferm was (and still is) Chief Engineer of the same plant. Some half dozen other patents related to the mill were later assigned to Cold Metal. Such a mill differed from an ordinary reversing plate mill primarily through its ability to break slabs down to thin gage sheet or strip with a single original heating of the slab, and the sheet or strip coiled up in a furnace on each side of the mill during each pass in order that the rolling may be completed with the steel maintained within a proper temperature zone. There is an alternate design which includes an auxiliary intermediate furnace.

In the early days, Cold Metal endeavored to interest a number of the steel manufacturers in a Steckel reversing hot mill but were unable to make much progress and consequently arranged for an experimental operation at the Brier Hill plant of the Youngstown Sheet & Tube Co. An old 4-high cold mill was turned over to them, although at the time they took it over it had been

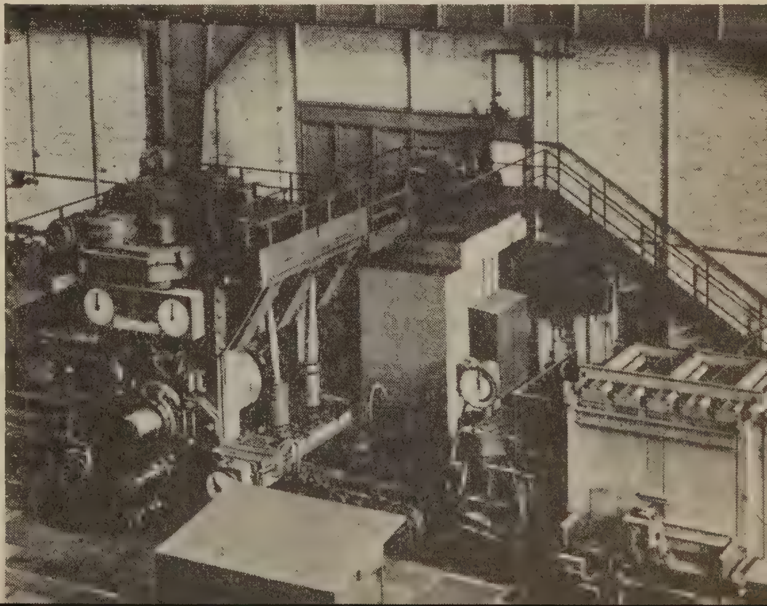


● First Steckel-type reversing hot mill at Youngstown's Brier Hill plant.



● (Above) McLouth's Steckel-type mill has operated successfully for years.

● (Below) Reversing hot strip mill in the Dortmund plant of Hoesch. Now operating.



converted into a plate mill. Additional equipment was added and this resulted in a mill which would operate sufficiently to prove its utility but which was necessarily hindered to a large extent due to the lack of many features which would have been desirable but which could not be incorporated because of lack of funds. Coils were rolled on this mill during the years 1930 to 1932, and even a few Allegheny stainless slabs were pushed through with quite decent results. A photograph of this mill is shown here. This mill utilized slabs which were approximately 4 in. in thickness, and without reheating, rolled coiled stock down to 13 gage in widths as wide as 36 in.

Youngstown Sheet & Tube then wished to learn whether it was practical to roll heavier slabs into longer lengths of skelp. To ascertain what might be expected along these lines the coilers from the mill at Brier Hill were moved to the Campbell Works and an old Mackintosh-Hemphill, 2-high, 30-in. Universal mill was arranged in a Steckel setup. The necessary pinch rolls, guides and other equipment were also transferred from Brier Hill to Campbell. This mill rolled a considerable quantity of coils but the resultant finish was not too good because no facilities were provided in the form of high-pressure water and, in addition, there were certain limitations with respect to speed, control of the mill, etc.

As a result of these tests, the Youngstown Sheet & Tube Co. set up a 4-high mill stand (the former Brier Hill stand) at Indiana Harbor, equipping it with coilers, etc., and operated it in conjunction with still another Mackintosh Universal, 2-high mill, which was used for doing the roughing work. Substantial quantities of hot-rolled strip were produced on this mill for later cold reduction into the form of tin plate at their Indiana Harbor Works. Many thousands of tons of tin plate were sold and produced in this manner. Because of the fact that Youngstown Sheet & Tube desired to have a hot mill which could produce a much greater tonnage at some future date and also because they wished to be able to roll wider strip, a continuous mill was installed and all Steckel mill operations were abandoned. This 4-high stand later was acquired by Mr. Sherman of the Dominion Foundries & Steel Ltd. of Hamilton, Canada. And, the primary rougher (the Mackintosh Universal mill) was much later acquired by Altos Hornas at Monclova, Mexico, converted into a reversing Steckel-type hot mill and since 1944 has turned out large quantities of 48-in. hot strip for cold reduction into tin plate.

After observing the operations on the 2-high Universal mill at the Campbell Works of Sheet & Tube, Mr. Sherman was determined to produce his own hot strip so that he could go into the tin plate business. Cold Metal assisted him to do this and to convert his own 30-in. Universal mill into a Steckel-type reversing hot mill. This was placed in operation somewhere around 1934 to 1935 and a considerable tonnage of hot strip was produced. This was subsequently converted into tin plate on a single-stand reversing cold mill. Mr. Sherman's courage, foresight and imagination paid off, and additional funds were poured into the manufacture of tin plate on an extensive basis. The company is at present the leading producer in Canada. Dominion obtained the original 4-high stand from the Indiana Harbor Works of Youngstown Sheet & Tube and reconverted his 2-high unit back to a Universal mill so it could be used as a primary rougher. This installation is still in use. Dominion has never attempted to really smooth out the operation or make the installation a completely up-to-date one from the standpoint of modern mill practice, so that criticism has on occasion been directed at this installation. But, in view of the success achieved by the company, such criticism has left Dominion singularly unmoved.

About a year later, Donald B. McLouth of Detroit became interested in the possibility of having a small inexpensive hot strip mill in Detroit in order to expand his activities. Cold Metal worked with McLouth even though at the time the former's finances were at an extremely low ebb. Mackintosh-Hemphill built the mill. It was a 2-high job and the strip was rolled from slabs in the beginning. A single-stand edging mill was employed and 2-in. thick slabs were used. Later a 2-high roughing stand was put in, a changeover was made to heavier slabs, and the production of the mill was stepped up to some extent with much heavier coils as a final product. This second stand also resulted in a much better surface finish. The outstanding feature about the McLouth installation was that the mill and the buildings, slab heating furnace, electrical equipment and the various appurtenances all came to a total capital outlay of slightly less than $300,000. The Steckel hot mill in the hands of McLouth Steel Co. became an extremely adroit manufacturing operation. This tiny mill has produced at times in excess of 10,000 tons a month and has rolled substantial quantities of material as light as 0.050 in.

A photograph of the McLouth mill is shown herein. McLouth is now having another reversing hot mill built by Mesta which will roll coils in the neighborhood of 40 in. in width and will probably be confined largely to the production of stainless strip steel.

It was McLouth who first rolled commercial stainless steel coils on a reversing hot mill. The stainless slabs were purchased from nearby Rotary Steel Co. whose president at the time was W. H. Colvin, Jr. Messrs. Colvin and McLouth were close personal friends also, and it was then that Mr. Colvin became convinced of the possibilities of basing an entire stainless and alloy rolling operation on such a mill. Later, Mr. Colvin became president of Crucible Steel Co. of America and subsequently staked the entire revitalization of Crucible's stainless facilities on the reversing hot sheet mill.

Next in the historical picture was Hoesch Koln Neuessen A.G. of Dortmund, Germany. Their interest in the reversing hot-strip mill dates from 1936 to 1937 and they obtained a license from Cold Metal to cover its installation. Cold Metal sent A. B. Montgomery abroad to assist in design and construction. The reversing mill stand was constructed by Fried. Krupp Grusenwerk Aktiegesellschaft of Magdeburg, Germany. A photograph of this Hoesch mill is shown. The building of this mill proceeded very, very slowly and it was just about ready to start at the time the war broke out, although even then it was not entirely completed. Recently this mill has started rolling coiled stock of satisfactory quality. This mill was designed for an annual capacity of 300,000 tons to roll strip up to 50 in. in width, but because of the chaotic conditions in Germany has never operated on anything except a limited basis.

On the scene then came Altos Hornos de Mexico S.A., Monclova, Coahuila, Mexico. In 1944 they obtained the 2-high Mackintosh Universal mill from Youngstown—the original rougher for the original Steckel reversing hot mill. Furnaces and reels were added, and a 17x39x55-in. ingot is knocked down to 48-in. wide hot strip for subsequent cold reduction to tin plate. This installation has had over four years of eminently successful commercial operation.

As of today Crucible Steel Co. of America has just placed in commercial operation a wide reversing hot mill at Midland, Pa., and this entire installation is described in greater detail in the following article. The equipment was built by United Engineering & Foundry Co. and is capable of rolling alloy steel sheet in hot coils down to 0.076 in. thick and from 15 in. to 54 in. wide. The mill itself is 66 in. wide. The capacity of the mill is estimated to be of the order of 27,000 tons monthly.

In the United States five other mills of the reversing hot-strip type are now in various stages of construction. One of these is to go into the A. M. Byers plant for the rolling of skelp for steel pipe and also, perhaps, some quantities of stainless coils for sale to cold-rolling mills. It is a 2-high, 40-in. mill being built by Mackintosh-Hemphill. A. B. Montgomery, formerly of Cold Metal, is consultant for A. M. Byers Co. on this installation. Mackintosh-Hemphill has also built a 2-high, 31½-in. mill, along with primary roughing units for Cia. Siderurgica Belgo Mineira, Monlevade, Brazil, and this installation is now in transit to that country.

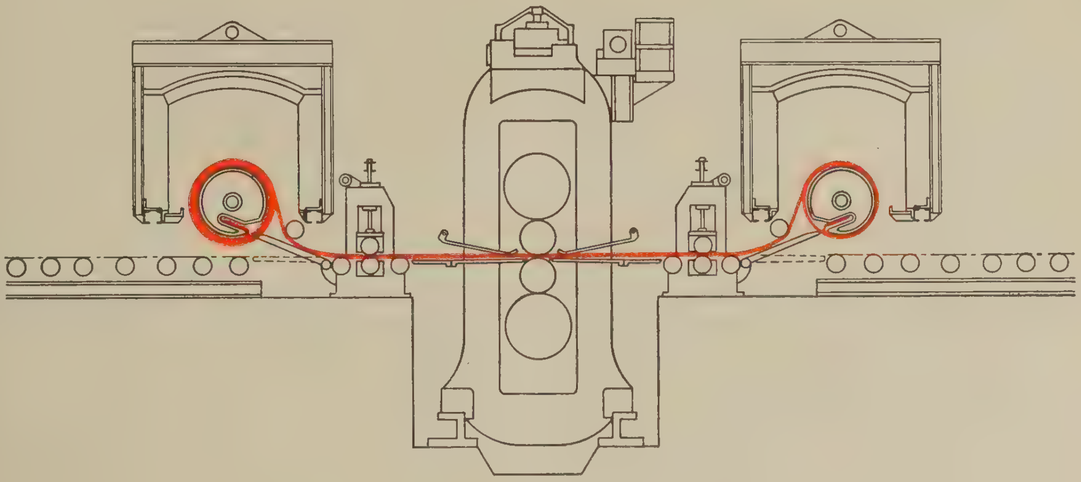
About two years ago, in 1947, Arbed of Luxembourg became interested in the reversing hot mill, although actually they had been giving consideration to the matter at a considerably earlier period. A mill largely similar to the Crucible mill is now being constructed by United for Arbed. This mill will be used to roll ordinary carbon steels in widths up to 54 in.

McLouth has decided to operate a larger reversing hot mill, working for the most part on specialty steels such as stainless. Mesta is building this installation. It is 4-high and about 44 in. wide and is scheduled for operation in the early Fall.

Newport Steel Corp. (formerly Andrews Steel Co.) of International Detrola Corp. has assembled a 66-in. mill from used equipment, with A. B. Montgomery as technical consultant. A 4-high plate mill and primary roughing mills were secured from Lukens, ancilliary equipment was picked up elsewhere, and Lake Erie Engineering Co. has handled all the rebuilding and revamping into an operational installation under the design instructions of A. B. Montgomery. This mill has already undergone test runs at Wilder, Ky.

And, less than a month ago, Cold Metal Products Co. was advised by wire that the Directors of Acieries & Forges de Firminy, Firminy, France, had agreed to accept a proposal involving rebuilding their mill in order to incorporate winding reels within furnaces and other desirable features developed by Cold Metal. This mill is 4-high and 40 in. wide and will roll alloy as well as carbon steel.

Such then is the current status of the reversing hot sheet-strip mill. The same operational and economic circumstances which have encouraged so many plants to already adopt this type of rolling unit apply also to many another smaller producer who aspires to independence in semi-finished steel. The future may well see more orders placed for mill construction, as this single-stand multi-purpose rolling unit at long last comes into its own.



● Crucible's new 4-high reversing hot-sheet-strip mill. On each side of the mill are pinch rolls and drum-type up coilers housed in gas-fired, box-type furnaces operating at temperatures of 1200° to 2100° F. The work rolls are 27x66 in. driven by a 500 hp G. E. motor. Back-up rolls are 48x66 in. with 100 hp screwdowns. Coilers are powered by 150 hp motors. Steam and high pressure water sprays effectively remove scale and mill speed is on the order of 1200 ft per min.

Crucible Opens

Today, Crucible Steel Co. of America formally opened a new $18,000,000 stainless and alloy strip steel plant at its Midland, Pa., works. This new entry into the special steel strip picture will, as presently tooled, turn out hot-rolled steels in widths up to 56 in., and cold-rolled strip in widths from about 12 to 54 in. (other widths may be introduced later), in a myriad of gages and finishes of Crucible's Rezistal stainless, other special heat and corrosion resisting steels, alloy and high-carbon steels. Its processing capacity for these special steels will be 27,000 net tons of ingots per month. Crucible also will roll Corten in thin gages, a new venture for this company.

In addition, the new mill provides hot-rolled steel for the agricultural department of Crucible, operating in a new plant building in the Midland Works adjacent to the new strip mill.

Stainless and alloy strip from the mill is to be provided to Trent Tube Co., Crucible subsidiary in East Troy, Wis. Trent produces special stainless and alloy steel thin-wall tubing by a continuous welding process.

The Midland plant also will be a source of semi-finished stainless, alloy and high-carbon steels for the Spaulding Works of Crucible at Harrison, N. J., which in a new plant turns out a great variety of cold-rolled steel specialties in narrow widths.

The new Crucible strip plant handles the steel from ingot to finished product under one roof in a three-quarter mile series of buildings. Operating in tandem with a 2-high slabbing mill is a new 27 x 66 in. 4-high hot reversing mill. The coilers on either side of this machine are enclosed in furnaces. The cold rolling mills include a 48-in. 3-stand 4-high mill, a 48-in. single stand 4-high mill, a 26-in. 4-high mill, and a single stand skin pass mill. The conveyer and transportation systems, the furnaces and charging machines, pickling and annealing facilities, the shears, slitters, cutters and numerous auxiliaries, are the most modern and efficient available. There are broadcast communications for the use of machine operators and supervisors from one end of the mill to the other.

The equipment highlight of the new plant is a United 4-high 66-in. reversing mill using hot-coiling furnaces on each side. This mill is the latest of a very few such mills built and embodies the accumulated experience of all hot-coiling mills built by United. As presently tooled, the mill has rolled strip from 1 in. to 0.076 in. in thickness and widths from 15 in. to 50 in. Further reductions and greater widths will be produced later. At present the mill will roll the widest strip produced on the mills of this type and it is ultimately capable of rolling strip up to 62 in. wide.

By use of furnaces and reels at each side of the mill, heavy reductions under favorable rolling temperatures are obtained.

A 14,000 sq ft stripper and ingot storage building is located at the head of the hot line. Ingots handled range in size from 9 x 15 in., weighing 1100 lb and 24,000 lb respectively. Charging cranes to handle these ingots consist of a 5-ton Morgan and a new 10-ton Alliance.

Ten batch-type furnaces have a hearth area of 660 sq ft. and a temperature range of 2150° to 2380°F. The usual heating cycle for ingots is 5 to 8 hr, although certain special steels require up to 24 hr of heating. Six of the furnaces are of the sprung type and four new ones are the latest Dietrick suspended arched-roof types. Coke gas or natural gas is normally used, with oil as a standby furnace fuel. Temperature regulation, at present achieved with manual controls, soon will be fully automatic, to be installed by means of control apparatus.

The first mill on the line is a 2 high 32 in. diam by 72 in. wide roll, broadside mill with a double-reduction 1500-hp drive. This mill is used for scale breaking and cross-rolling of slabs to increase their width. The next unit is 2 high 32 x 69 in., 300 to 1200 rpm reversing slabbing mill with a 5000-hp direct drive. This mill reduces ingots to slabs of desired sections and reduces slab thickness to desired sections for further reduction in the 4-high reversing hot mill. Operating in conjunction with this mill is a 2-high edging mill with vertical rolls 28 in. in diam by 30 in. high. Its speed is the same as the slabbing mill and it has a single reduction of 1500-hp drive. The function of the edging mill is to reduce the sides of ingots to desired width, usually from 4 to 6 in.

A Morgan slab shear and a slab conveyer are the next units on the hot line. The shear has guillotine blades 64 in. wide and is operated by two 150-hp motors through a single reduction drive. It shears slabs to specified length and crops rough sections of strip before it reaches the 4-high hot mill. The slab conveyer is 20 ft

Ultra Modern Mill

wide with a counterbalanced chain which carries slabs from the rolling line to the adjacent conditioning building. Here, slabs are ground or scarfed and stored to await transfer back to the furnaces.

Reversing Hot Mill

Operation on the reversing hot mill is about as follows. A strip-plate is delivered from the 2-high roughing mill at approximately 0.6 to 1.25 in. thick, and after being front and back end sheared is given one or two passes at the new 4-high reversing finishing mill in the flat form prior to coiling. The strip is then coiled until the end of the strip has left the mill completely, at which time a pair of pinch rolls, located on each side of the mill, is pressed downward on the strip to prevent the tail end of the strip from being coiled and at the same time to start feeding same back into the mill to the other coiler. Thus the first coiler now becomes an uncoiler, while the other coiler becomes the winding coiler. The mill and auxiliary equipment are reversed for every pass.

This operation is continued until the final strip thickness is obtained, at which time the strip is conveyed down the run-out table to the final mandrel type coiler, where it is coiled and discharged on a roll conveyer for cooling and transferring to the coil storage building. In the event the final strip is required in flat form it will not be coiled but will be delivered to the finished shearing end to be sheared to the required lengths.

The reversing hot mill work rolls are 27 in. in diameter and are direct driven by a 500-hp G. E. motor. The back-up rolls are 48 in. in diameter and are operated by 100-hp screw-down motors. The back-up rolls have Morgoil bearings and the work rolls are fitted with roller bearings. A Farval automatic lubricating system oils the entire mill.

This mill is capable of 1200 ft per min rolling speed. Ordinarily, five passes of the strip are sufficient to reduce strip to the desired finish gage.

The reels in the Dunmar furnaces were made by the Calorizing Co. to United order. They have a single slot reel driven by a 150-hp motor. When the strip passes through the rolls, the reel receives the strip end and starts automatically. Previous furnaces operated with mills of this type had reels fitted with paddles which seized the strip end while the reel was rotating. The overhead furnaces are gas fired to a temperature of 1200 to 2100°F. Small pinch rolls are located on either side of the mill, between the mill and furnaces, to control the strip motion. Steam and high pressure water sprays are employed to remove scale.

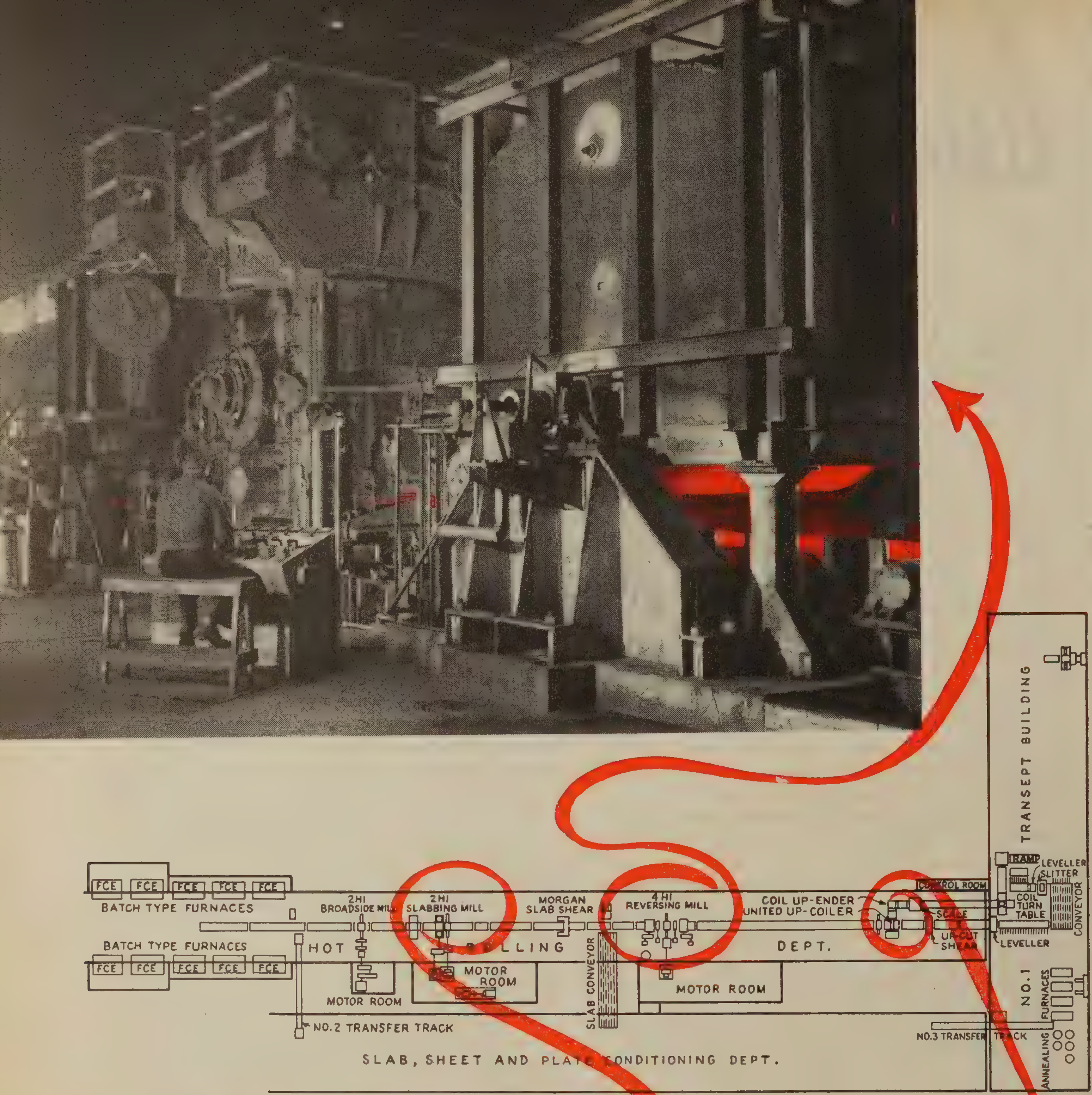
Near the end of the hot line there is a United 60 in., hot-strip upcoiler. A by-pass permits plate to continue to the 60-in. upcut plate shear. The upcoiler employs 10 motors totaling 350 hp. These units operate the coiling mandrel, two wrappers, side guards, two pinch rolls, a reel unloader and two lubricating systems.

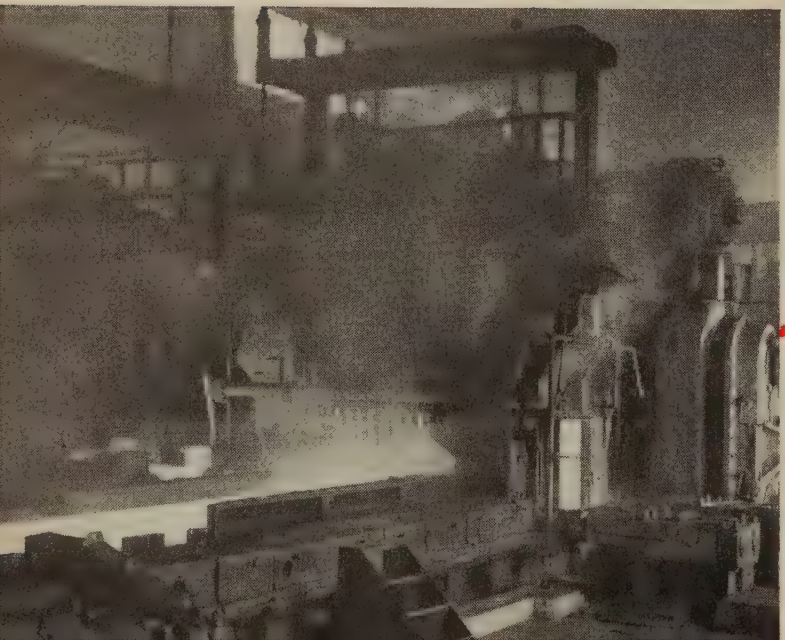
A 25,000-lb capacity upender is installed at the upcoiler to handle coils. Coils are weighed on a Fairbanks Morse two-section mill scale of 40,000 and 60,000 lb capacities. A conveyer with double strand 12 in. pitch chains handles coils up to 56 in. OD by 30 in. ID and 50 in. long, from the mill building to the storage building. A hydraulic turntable with rotating pallet 58 in. in diameter by 77 in. directs the flow of coils at right angles or as directed. A slitter and roller leveler for plates and sheet bar completes the hot rolling mill line.

A transept building at the end of the hot mill is divided into a storage area of 29,000 sq ft for steel in process, and an annealing furnace area. The sheet annealing furnaces consist of four bases and two hoods with 22 ft 6 in. x 8 ft 2 in. rectangular chambers. The coil annealing furnaces are of the bell type and consist of line bases and two hoods 5 ft 6 in. x 9 ft. 7 in. in size.

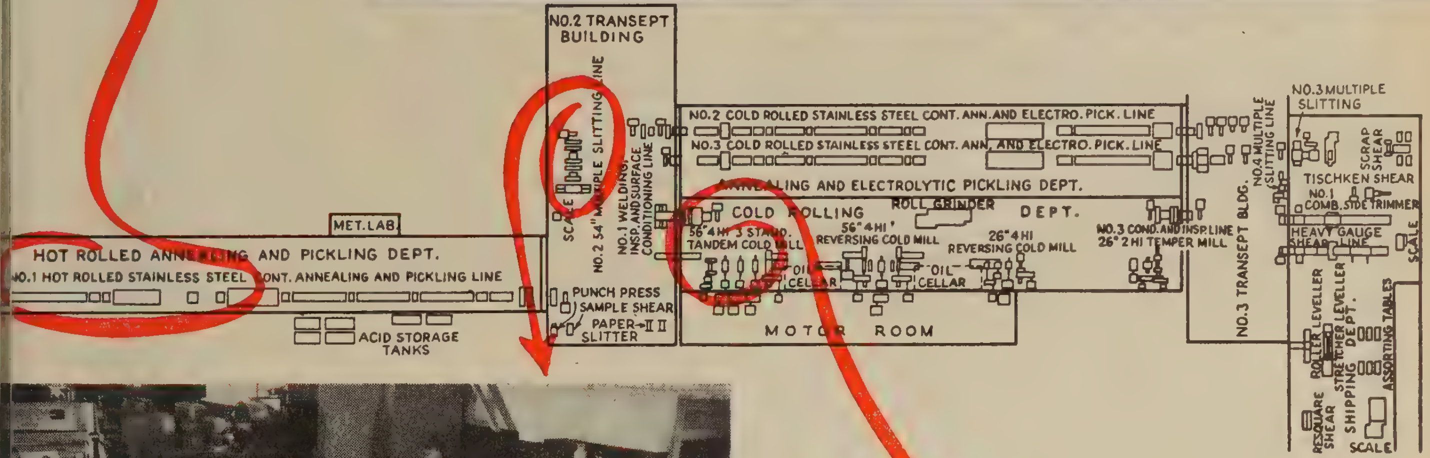
Complete new cold mill and processing equipment is installed for cold finishing and processing all grades and types of stainless steel. This plant has one of the few 3-stand tandem 56 in. cold mills for cold rolling stainless at speeds up to 980 fpm. Besides this tandem mill, single stand 56 in. and 26 in. 4-high reversing cold mills are included in the cold mill operations. The usual annealing, pickling, conditioning, shearing, and levelling lines are installed, all of which are of the most modern type.

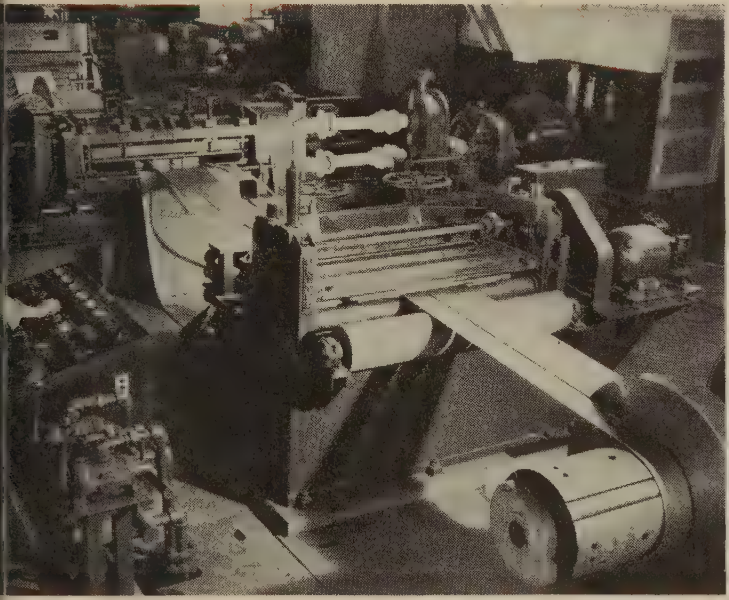
A flying shear line, of new design, is in the process of being erected. This flying shear line will be capable of shearing stainless strip from coil form into sheet lengths from 30 to 16 in. x 48 in. wide x 1/16 in. thick maximum.

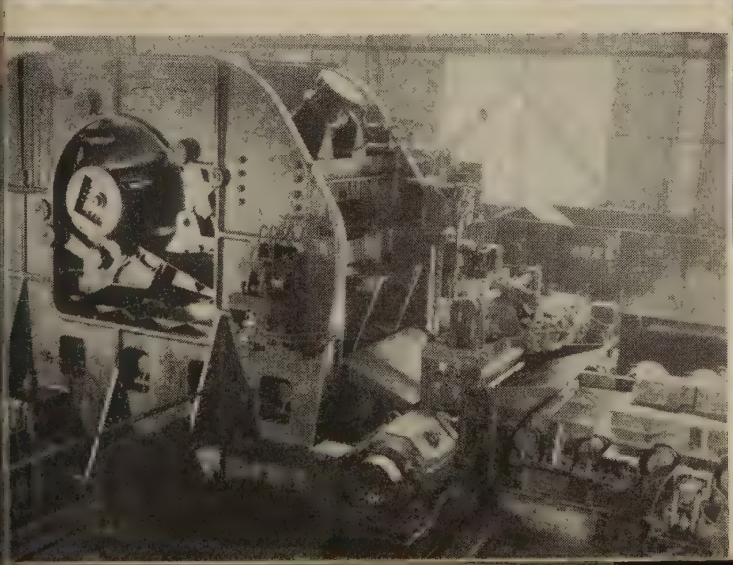

TRANSEPT BUILDING
FCE
FCE
FCE
FCE
FCE
BATCH TYPE FURNACES
2HI
BROADSIDE MILL
2HI
SLABBING MILL
MORGAN
SLAB SHEAR
4 HI
REVERSING MILL
COIL UP-ENDER
UNITED UP-COILER
CONTROL ROOM
RAMP
LEVELLER
SLITTER
COIL
TURN
TABLE
CONVEYOR
SCALE
UP-CUT
SHEAR
LEVELLER
BATCH TYPE FURNACES
FCE
FCE
FCE
FCE
FCE
HOT ROLLING DEPT.
SLAB CONVEYOR
MOTOR ROOM
MOTOR
ROOM
MOTOR ROOM
NO.2 TRANSFER TRACK
NO.3 TRANSFER TRACK
NO. 1
ANNEALING FURNACES
SLAB, SHEET AND PLATE CONDITIONING DEPT.



Crucible's new rolling mill is essentially straight-line flow from ingot to shipping. The unique feature is the reversing hot mill, upper left.


NO.2 TRANSEPT BUILDING
NO.2 54" MULTIPLE SLITTING LINE
SCALE
NO.1 WELDING, INSP. AND SURFACE CONDITIONING LINE
PUNCH PRESS
SAMPLE SHEAR
PAPER→II II
SLITTER
MET. LAB.
HOT ROLLED ANNEALING AND PICKLING DEPT.
NO.1 HOT ROLLED STAINLESS STEEL CONT. ANNEALING AND PICKLING LINE
ACID STORAGE TANKS
NO.2 COLD ROLLED STAINLESS STEEL CONT. ANN. AND ELECTRO. PICK. LINE
NO.3 COLD ROLLED STAINLESS STEEL CONT. ANN. AND ELECTRO. PICK. LINE
ANNEALING AND ELECTROLYTIC PICKLING DEPT.
COLD ROLLING DEPT.
ROLL GRINDER
56" 4 HI 3 STAND. TANDEM COLD MILL
56" 4 HI REVERSING COLD MILL
26" 4 HI REVERSING COLD MILL
OIL CELLAR
OIL CELLAR
NO.3 COND. AND INSP. LINE
26" 2 HI TEMPER MILL
MOTOR ROOM
NO.3 TRANSEPT BLDG.
NO.4 MULTIPLE SLITTING LINE
NO.3 MULTIPLE SLITTING
SCRAP SHEAR
TISCHKEN SHEAR
NO.1 COMB. SIDE TRIMMER
HEAVY GAUGE SHEAR LINE
SCALE
ROLLER LEVELLER
STRETCHER LEVELLER
SHIPPING DEPT.
ASSORTING TABLES
RESQUARE SHEAR
SCALE





A Welded Construction

PRODUCTION tools, jigs and fixtures, built by the welded construction methods, are being made in many plants. In shops that do not have pattern departments or a foundry, cast work of this nature must be sublet, causing delays in the completion of the tool. When these tools can be built by welded construction this delay is avoided as the tool can be made complete in the tool room.

In fig. 1 is shown a quick-change gear box, made of cast iron and used on a special type of machine. The first operation in producing this detail is to machine the surface *X* and the bosses *Y* and *Z* at each end of the casting. The next operation is to drill and then ream two 0.878 in. holes in the boss extension, two 1.000 in. holes, one 0.752 in. hole, and one 0.4375 in. hole in the body of the casting.

The drill jig used for machining these holes is shown in fig. 2. This jig is made by welded construction, the first procedure being to machine the various ½ in. steel plates to their proper lengths and then weld them to form the jig body as shown. The steel plate *A*, 3x4x⅜ in., is then welded to the body. Another steel plate, *B*, with the same dimensions is also welded to the body on the opposite face in the position shown.

At the rear of the body is welded a steel plate, *C*, which measures 2½x1⅜x½ in. On the upper surface of this plate is welded a steel plate *D* 2½x2½x⅜ in. In the front and rear vertical plates are cut openings *E* to measure 2⅛x1¼ in. Four tool steel, hardened, shouldered rest pins *F* are placed in the upper plate of the jig. In the rear vertical plate is placed a locating screw with hexagon locking nut *G* in alignment with the boss on the gear box extension. Two other locating screws with hexagon locking nuts *H* are positioned in line with the face of the bosses on one side of the workpiece.

Centered between these locating screws but on the opposite end of the jig body is a steel knurled head holding screw *J*. In the front vertical plate is also placed another steel knurled head holding screw *K*. In the cut openings *E* is a steel bar *L* and in the center is a screw through the head

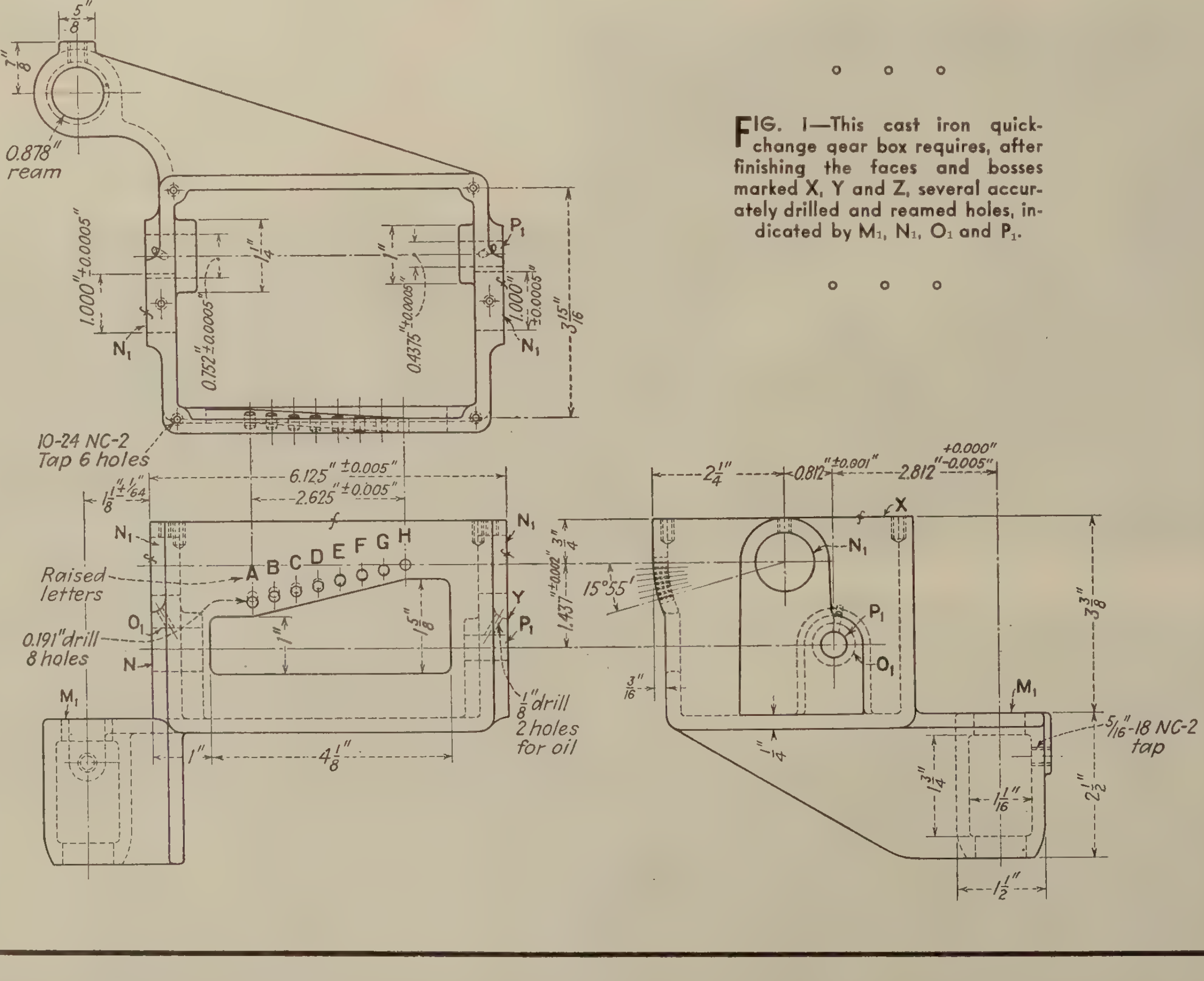

5/8"
7/8"
0.878" ream
1.000"±0.0005"
1/4"
1"
0.752"±0.0005"
0.4375"±0.0005"
1.000"±0.0005"
P₁
N₁
N₁
3 15/16"
10-24 NC-2 Tap 6 holes
6.125"±0.005"
2.625"±0.005"
1 1/8"±1/64"
N₁
Raised letters
A B C D E F G H
O₁
0.191" drill 8 holes
N
M₁
1"
5/8"
N₁
3/4"
1.437"±0.002"
Y
P₁
1/8" drill 2 holes for oil
1"
4 1/8"
2 1/4"
0.812"±0.001"
2.812" +0.000" −0.005"
X
N₁
15°55'
P₁
O₁
3/16"
1/4"
3 3/8"
M₁
5/16"-18 NC-2 tap
1 3/4"
1/16"
2 1/2"
1/2"

FIG. 1—This cast iron quick-change gear box requires, after finishing the faces and bosses marked X, Y and Z, several accurately drilled and reamed holes, indicated by M₁, N₁, O₁ and P₁.

Drilling Jig

By **ROBERT MAWSON**
Providence, R. I.

of which has been driven a pin of sufficient length for the operator to move the screw efficiently.

Accurately located to drill and ream the 0.878 in. holes in the extension on the casting is a tool steel, hardened and ground, bushing *M*. In the vertical side plates are located two tool steel, hardened and ground, bushings *N*, each with a suitable hole to guide a 1.000 in. reamer. In the left hand vertical plate is located a tool steel, hardened and ground, bushing *O* for reaming the 0.752 in. hole. A tool steel, hardened and ground, bushing *P* in the right hand vertical plate is the guide for reaming a 0.4375 in. hole.

To use the drill jig it is first placed with its upper surface on the drill press table. A gear box casting is placed inside the jig resting on the heads of the pins *F*. The screws *J* and *K* are screwed in, which locates the workpiece against the screws *G* and *H*. The steel bar *L* is next placed in the two openings *E* and the screw in the bar tightened by means of the pins through its head. The end of the screw coming in contact with the casting holds it against the rest pin *F*.

The jig is then placed with its proper surfaces resting on the drill press table and the various holes that have been noted are drilled and then reamed. The tools used for the drilling operations are made with shanks of the correct respective diameters to have a good running fit in the bushings. With this manufacturing procedure only one set of bushings are required for the drilling and reaming operations.

To remove the finish machined gear box it is only necessary to loosen screws *J* and *K*, loosen the screw in the bar *L*, which is then taken out of the jig, and the workpiece is free to be lifted out of the jig.

This welded drill jig locates the workpiece accurately and also holds it securely during the machining operation. The tool has also the important feature that the locating surfaces can be adjusted. By moving the screws *G* and *H* and fastening with the nuts in the changed setting, any variation that might be found as the castings come from the foundry can be handled.

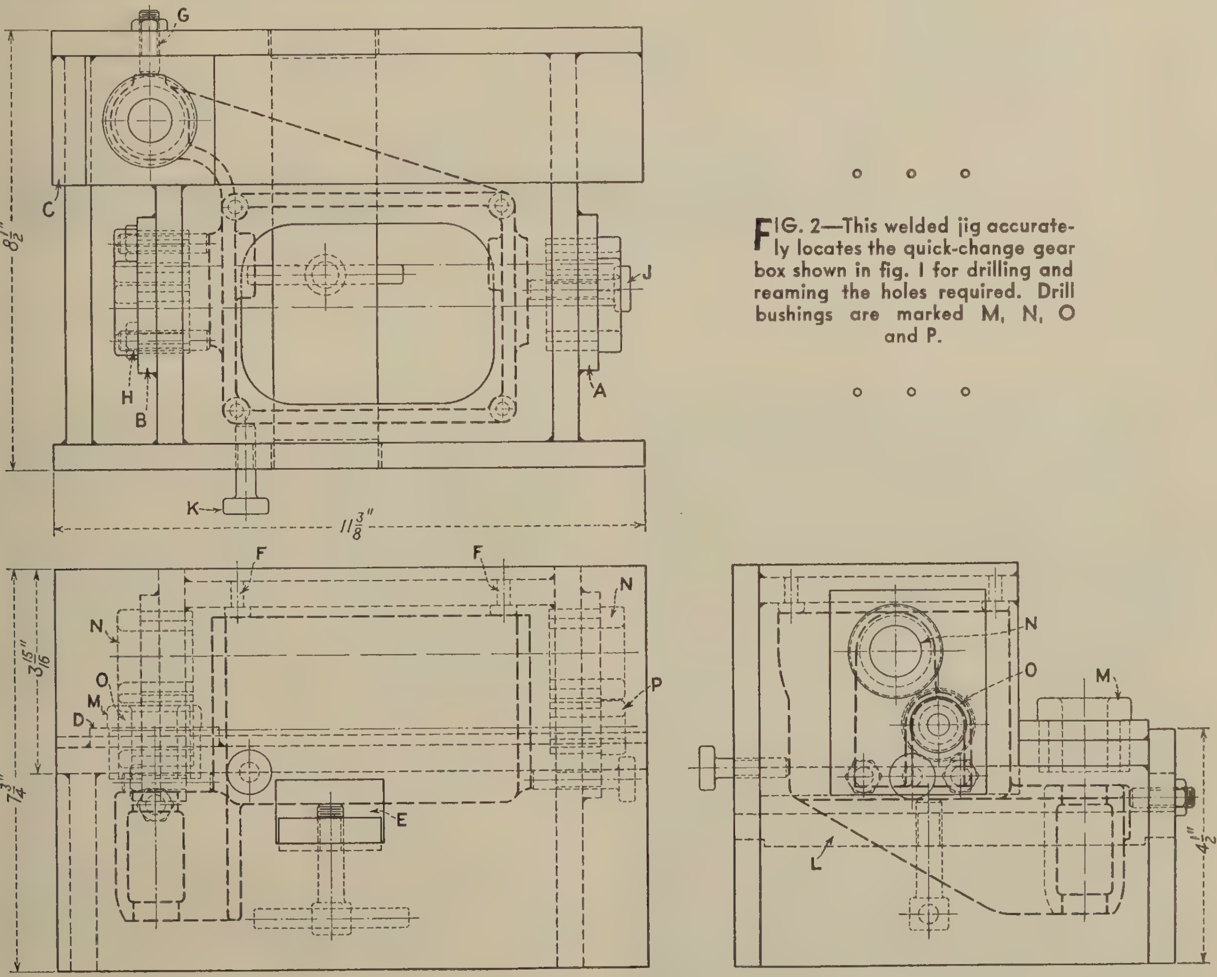


FIG. 2—This welded jig accurately locates the quick-change gear box shown in fig. 1 for drilling and reaming the holes required. Drill bushings are marked M, N, O and P.

By E. A. ZAHN
Chemical Section, Works Laboratory,
General Electric Co.,
Schenectady

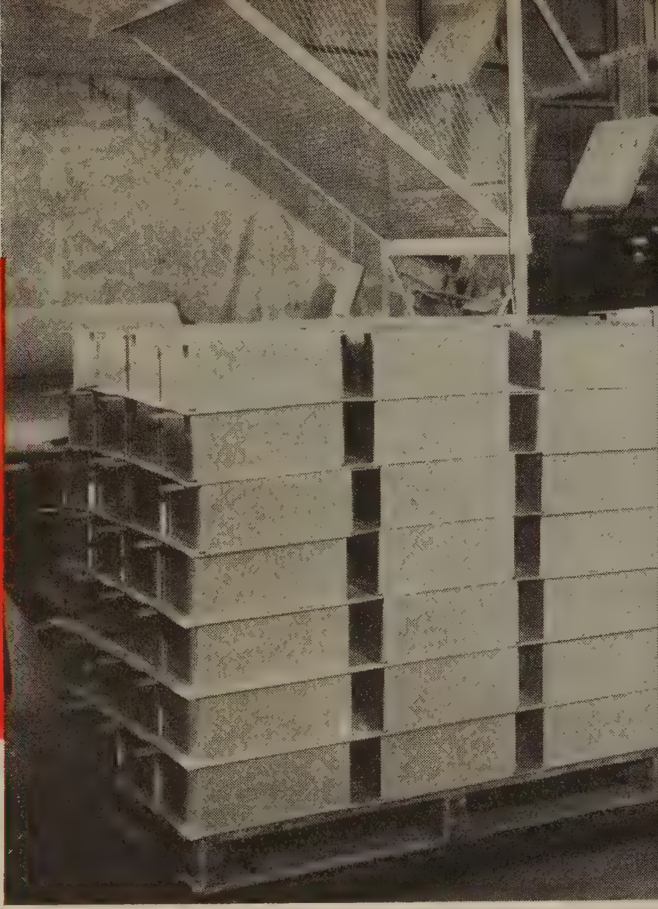


FIG. 1—Housings for control units, formerly spray pa
tion ha

A Control System for

SPRAY painting, whether by hand or automatic machinery, is the most expensive method of paint application. On an average, 50 pct paint utilization is termed normal efficiency. On products having large panel surfaces, such as cabinets, the utilization percentage runs a little higher; however, utilization may be as low as 25 pct on items which are small and not continuous in surface.

Painting cost and method studies have resulted in increased quality at reduced cost, especially in the automotive and appliance fields. As the result of studies, film thickness of paint can be made more appropriate and uniform, fewer rejects will result and ultimately less volume of liquid paint material will be used or wasted.

The first step in studying the efficient utilization of paint is to determine if the job must be sprayed, or if application can be made by dip or flowcoat. These last two methods are very high in efficiency and material utilization, and within the past three or four years have been successfully used for work of sizes, shapes and weights previously considered impossible. Housings for control units, fig. 1, are an example of parts finished by this method.

Nevertheless many products must of necessity be sprayed, as in fig. 2, for reasons of appearance. In handling these, the next step is to put the job on a piecework basis. This may be done in one of two ways. Either the individual operators can be put on piecework, or the entire group of operators can be put on a cooperative piecework basis.

Five-Point Program for Improving Painted

(1) Study paint utilization to determine whether the job must be sprayed or whether dip or flowcost methods are applicable.

ow finished by a flowcoat process. Efficiency and material utiliza-
ased substantially.

Paint spraying operations, whether done by hand or automatic machine, are a fruitful field for quality improvement and reduced finishing costs. A five-step program to accomplish these objectives, covering the procedure from materials control to operator training, is disccussed.

Spray Painting

Ultimately the group cooperative basis works best. It is advisable that the supporting labor as well as the actual sprayers be included in the group; and in some instances, it is advisable for this to be extended to include assembly operators. For the normal finish damage occurring during assembly has always been a source of loss in paint materials as well as a loss in production. Therefore, a fundamental of the control system must be respect of the value of the finish appearance by the operators. And this respect will best be realized under a piecework system in which rejects are charged against the operators.

The third step is to standardize all spray equipment. Each operator should have the same type gun, the same fluid needle, standardized air caps, etc. Once these are standardized, further steps should be taken on such items as air and fluid pressures. The gun adjustments must also be standardized and if necessary all adjustments may be locked to insure against tampering.

Some of the worst violations in spraying result from an operator's tendency to boost air pressure. Many operators still feel that a wide fan spray and high air pressure make for greater speed. This is not true. It merely makes more noise and more waste. Operating speed of the gun is determined by the fluid pressure governing the volume of paint delivered to the gun. The actual atomizing air pressure can be easily controlled and locked at the air transformer for each group of operators. The transformer is equipped with gages for which an optimum constant read-

Finish Quality and Reducing Finishing Costs

(2) Put the job on a piecework basis.
(3) Standardize all spray equipment.
(4) Establish controls on the liquid paint used.
(5) Train operators in efficient spray motion.

FIG. 2—For maximum efficiency, hand spray booth operators should be put on a piecework basis. Uutimately, a group cooperative system, possibly including assembly operators, has been found to work best.

ing should be determined. When the air pressure is regulated it should be done with the guns in operation. This is called the working pressure. A short study of conditions will quickly determine the most economical pressure to use.

The best atomizing or working pressure—which should be regulated with the guns in operation—is always the minimum required to atomize the volume of paint delivered to the gun and still result in a smooth flowout of wet material on the painted surface.

Usually gages on paint pressure tanks are not particularly accurate because of the low tank pressure used. One method of testing this pressure, provided all other controls have been applied, is to shut off the atomizing air and allow paint to pass through the gun into a standard calibrated vessel. The flow is timed with a stopwatch so that a given volume of paint is delivered in a specific time. In some instances, this test is or should be made at the beginning of each work shift.

The fourth step in the program should be to set up controls on the liquid paint. Assuming that the proper solvents have been selected—that is, solvents sufficiently compatible with the heavy paint to reduce it to a good spraying viscosity with the lowest solvent addition—it must always be kept in mind that solvent is a complete loss. A gallon of thinner plus a gallon of paint does not make two gallons of paint. It makes two gallons of thinned paint of which usually about 70 pct will be lost up the exhaust stack.

Viscosity and temperature go hand in hand. Therefore, a viscosity-temperature curve should be prepared within the working temperature range, usually 70° to 80°F. There are viscosity instruments available which can produce readings within 20 sec. The sample paint is brought down below the low working temperature point and a reading is taken with each degree of temperature rise. These points are plotted and a curve is drawn. This preliminary or starting curve can actually be prepared in one hour. As the paintmixing operator prepares the paint for any particular day, then, it is merely necessary to consult the thermometer and the viscosity-temperative curve to establish the proper mixture at the existing temperature.

Controls on liquid paint raw materials can and should be extended to the paint supplier. Aside from color and gloss, the supplier should control shipments of heavy paint to include total solids and viscosity.

A paint manufacturer's laboratory and a consumer's testing laboratory should combine forces to produce a high quality coating. It should be checked and approved through careful laboratory application and test. A certain film thickness that produces the desired results will be found and no other film thickness, either heavier or thinner, can produce the exact quality of film desired.

The viscosity-temperature control plus those other controls previously mentioned should all be applied to assure production of that desired film thickness. A fat paint film is always undercured and a weak paint film does not give the proper protection. All of this careful formulation and development will have created a paint which automatically becomes highly competitive among paint manufacturers. Let that competition show reduced cost at no sacrifice in quality. It is always an advantage to the paint manufacturer to have his materials result in good mileage and good performance.

The fifth step in the program is operator training in spray motion. An operator should be trained to make the same number of strokes on each piece. The distance at which the gun travels after it passes the end of the object should be controlled in the motion study. It is not always necessary to trigger the gun each time it passes the end of the object. The distance at which the gun is held from the work is very important. This part of the problem will correct itself as the other motions come under control.

Some manufacturers of spray equipment conduct a regular school to teach spray operators. It is costly and often not convenient to send regular operators to these schools. If a cooperative piecework job is being set up on a motion study basis, it would be more advisable to have the equipment manufacturer's representative do the training on the job. During this training program or motion study, it is a simple matter to classify operators as to their ability.

After these details have been attended to, a working system can be established. The number of gallons of mixed paint consumed in one day or per hundred units may be tabulated as well as the number of rejects or repairs necessary. In some instances, operators are actually paid on the basis of the actual day's good production with rejects subtracted in determining the figure.

In some instances it has been found advisable to tabulate the weekly paint savings on a dollar basis considering the actual v. the theoretical coverage against the amount of painted surface actually produced. Material costs for finishing are based on the cost of material to cover 1000 sq ft, 0.001 in. thick. A theoretical cost of coverage is computed from the density of the dried film, the weight of the liquid gallon, and the total percent of solid material in the gallon. The actual cost of coverage is often found to be double the theoretical cost, indicating the broad margin for improvement through the motion study system which is possible.

. . . NEW BOOKS . . .

"Metallurgical Working of Metal Scrap and Residues—White Metal Scrap—Vol. I," by E. R. Thews. Book considers the procurement and salvage of white metal scrap with the aim of promoting new methods and approaches. In German. Carl Hanser Verlag, Leonhard-Eck-Strasse 7, 13b Munchen 27, Germany. 22.50 dm. 355 p.

* * *

"Isotopes and Their Application in the Field of Industrial Materials," by P. C. Aebersold. Publication of the 1948 ASTM Edgar Marburg Lecture in booklet form gives information on the significance and interrelation of atomic energy and industrial material. Applications of radioactive and stable isotopes, along with information on facilities and tools required for isotope application in research, are dealt with. American Society for Testing Materials, 1916 Race St., Philadelphia 3. $1.00. 28 p.

* * *

"Record of the Second Session, Metal Trades Committee, International Labor Organization." Booklet contains an account of discussions, reports of subcommittees and resolutions adopted by the Metal Trades Committee at the second session of the group held in Stockholm in September 1947. International Labor Office, Geneva, Switzerland. 142 p.

* * *

"Thermokinematic," by Pierre Vernotte. Principles of thermokinematics and methods, both practical and theoretical, of dealing with heat phenomena are reviewed in book. In French. Service de Documentation & d'Information Technique, 4 Rue de la Porte d'Issy, Paris (XV°), France. Order by No. 224. Price, 1.200 fr. 00. 459 p.

* * *

"Oxyacetylene Welding and Cutting," by Stuart Plumley (revised and rewritten by T. B. Jefferson). Book, presented in the manner of a course of instruction, covers all types of welding and cutting work: pipeline welding, flame-cutting steel and cast iron, brazing, lead welding, welding light metals, bronze welding, brazing, hard-facing, boiler and firebox welding, etc. McGraw-Hill Book Co., 330 W. 42 St., New York 18. $6.50. 356 p.

"Metallurgy and Magnetism," by J. K. Stanley. Introductory text on ferromagnetism and types of magnetic materials discusses magnetic theory, factors affecting magnetic properties and related topics. A chapter dealing with methods of using various magnetic properties to study metallurgical and solid-state problems is included. American Soc. for Metals, 7301 Euclid Ave., Cleveland. $4.00. 150 p.

* * *

"The Epic of American Industry," by J. B. Walker. American history in terms of business development is reviewed in this book. The trend of government toward regulation and control of business is analyzed by the author. Harper & Brothers, 51 E. 33 St., New York 16. $5.00. 512 p.

* * *

"Proceedings of the 10th Annual Porcelain Enamel Institute Forum." Texts of the papers presented at the Porcelain Enamel Institute meeting of October 1948, along with the discussions on the papers, have been collected in book form. Porcelain Enamel Institute, 1010 Vermont Ave., N.W., Washington 5. $5.00. 162 p.

* * *

"Handbook of Patents," by H. A. Toulmin, Jr. Relationship of the patent law to manufacturing, research and engineering is discussed generally in this book to provide an overall view of the subject. Specific case references have been collected and included as a guide to patent lawyers. The international patent situation is also discussed. D. Van Nostrand Co., 250 Fourth Ave., New York. $9.00. 800 p.

* * *

"A Metallurgical Study of German Aircraft Engine and Airframe Parts, Vol. II." Summary of data resulting from the metallurgical examination of German aircraft engine and airframe parts by the British Aerocomponent Subcommittee, Technical Advisory Committee of the Special Alloy Steel Committee, is concerned with information on the types and quality of materials used, methods of manufacture, efficiency of heat treatment, finish, etc. Kennedy Press Ltd., 31 King St. West, Manchester 3, England. 10/6d. 110 p.

Some Notes on the History of Nodular Irons

Because of the widespread interest in nodular graphite irons, THE IRON AGE is publishing herewith, with the authors' permission, an exchange of correspondence relating to the early history of the development of the nodular (or spherulitic) graphite structure between H. Morrogh, British Cast Iron Research Assn., and Oliver Smalley, president, Meehanite Metal Corp., relating to the history of the development of the nodular (or spherulitic) graphite structure.

Morrogh's Comments

Dear Editor:

I have read with some interest the letter* by Mr. Smalley which appeared in the issue of Dec. 30, 1948, on the subject of nodular irons. The publications coming from the British Cast Iron Research Assn. on this subject only indicate that the original idea resulted from the investigations of this association in so far as the investigators were unable to quote any scientific or technical literature where the claim was made of a definite process applicable for the production of castings with a nodular graphite structure.

If Mr. Smalley or the Meehanite Metal Corp. had published an account of the production of nodular iron by tellurium additions or had illustrated the structure and mechanical properties, or if the authors of the various British Cast Iron Research Assn. papers had known of a foundry producing nodular cast iron by tellurium additions, appropriate reference would have been made. If Mr. Smalley is able to provide any information of this kind I am sure the foundry industry will receive it with great interest.

Mr. Smalley states that the Meehanite Metal Corp. had investigated the influence of magnesium and cerium in cast iron, but the present author is unaware of any reference prior to, and other than, the papers originating from the British Cast Iron Research Assn. and the recent American papers by Donoho and by Gagnebin and coworkers, which gave the slightest indication or hope that either cerium or magnesium additions could be used for the production of nodular structures. It is noteworthy that Mr. Smalley does not make any claims regarding patent applications for the use of either of these two elements.

I would like to emphasize that the cerium process is such that castings can be produced with the graphite wholly in the nodular form, without any heat treatment being necessary. The same remark is true of the magnesium process described by Gagnebin and coworkers and Donoho. There are no half-shades in these claims made by the British or American investigators. Correctly applied under appropriate conditions, both processes will produce gray iron castings with all the graphite in the nodular condition. The resulting materials have very superior mechanical properties to those of ordinary gray irons.

It is one of the principal claims of both the cerium and the magnesium processes that nodular graphite structures result. In the patent referred to by Mr. Smalley there is no reference to nodular graphite in the claims. The production of nodular graphite does not appear to be even a primary object of the invention.

There are innumerable references in the literature to the graphite in cast iron having a nodular form, but this is in general due to incorrect interpretation of badly polished microsections. Lacking further corroborative in-

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**The following letter is reprinted from* The Iron Age, *Dec. 30, 1948, in the interests of making this exchange of correspondence complete.—Editor's Note.*

Sir:

We have read with interest the bibliography on the "Properties of Nodular Cast Iron," Nov. 25 issue, p. 83, relative to the development of nodular graphite structures in cast iron without heat treatment. This would indicate that the original idea and first process for the manufacture of nodular graphite in gray cast iron resulted from the investigations of the British Cast Iron Research Assn. on certain additions to cause a degree of carbide stabilizing effect in reasonably soft gray cast iron, as a single treatment; or by means of a double treatment, cerium addition and inoculating addition. (Morrogh used either 80 pct silicon, ferrosilicon, SMZ alloy, or calcium silicide.)

Actually, the first discovery of the production of nodular graphite structures in gray cast iron dates back to before the war, when the Meehanite Metal Corp. was conducting various experiments with magnesium, cerium, selenium, tellurium and antimony. Out of this work resulted patent No. 2,364,922, promulgating the use of tellurium as carbide stabilizer with calcium silicide as graphitizer, with or without the addition of such metals as nickel, molybdenum and copper. This discovery covers also the production of a nodular graphformation, the British Cast Iron Research Assn. authors could not be expected to assume a statement consisting only of the few words "changes the graphite, reduces its length and even to nodular form" to be a recognition of the possibility of producing a malleable-iron-graphite-structure in the as-cast state.

Mr. Smalley says that the first discovery of the production of nodular graphite dates back to before the war and quotes US Patent 2,364,922, 1941, to substantiate his claims. It is possible that the origin of the nodular graphite structure will be the subject of discussion for some time. However, in discussing priority I would like to draw Mr. Smalley's attention to the fact that there are also three illustrated references to the occurrence of nodular graphite in as-cast cast iron in prewar German literature[1, 2, 3] to which reference was made in a B.C.I.R.A. paper[4]. Furthermore, there exists a reference to a German patent application[5], for the production of spherulitic graphite structures in a well-known German text book[6] on cast iron. The B.C.I.R.A. were only aware of this last reference after the publication of the various papers on the cerium process.

The establishment of the first investigator to conceive the possibility of the production of as-cast nodular cast iron is, perhaps, impossible and scientifically and technically it would not serve any very useful purpose to thrash this out. Some interest, however, does attach to the line of reasoning by which any particular investigator arrived at the discovery of nodular cast iron. As far as the present writer is concerned, the idea originated with the very occasional detection of isolated graphite spherulites in ordinary commercial gray iron samples which had not been heat treated. This was followed by noting the German references quoted earlier. The present investigator, and his coworker Williams, found it possible to obtain nodular graphite structures in nickel-carbon, cobalt-carbon, and nickel-iron-carbon alloys. Bearing in mind the close analogies existing between these alloys and cast irons, it was argued that it should be possible to produce such structures in cast

(CONTINUED ON PAGE 102)

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Smalley's Reply

Dear Editor:

I have read Mr. Morrogh's reply to my letter published in your valued journal of Dec. 30, 1948, and if this correspondence serves no other purpose than to establish a more exact history of the development of spherulitic graphite structure in cast iron, it will have proved worthwhile. In his three published papers, Mr. Morrogh has rather led his readers to believe that the original idea and first process for the manufacture of nodular cast iron resulted from the investigations of the British Cast Iron Research Assn.

I must compliment Mr. Morrogh on being honest enough to reveal earlier references to this subject and to the existing German patent for the production of spherulitic graphite structure.

It is unfortunate, however, that he chooses to assume that the origin of any idea must first appear in some scientific or technical magazine, when he is so well versed in patent procedure. That the British Cast Iron Research Assn, should limit their references to what they could find in published literature was perhaps convenient, but why they did not investigate patents and patent literature is beyond understanding, for I am sure Mr. Morrogh will readily admit that no government patent office would grant a metallurgical patent covering an invention, if that development had been previously presented before some technical society or had been published in some scientific or technical magazine. Such reference would be cited by the examiner as prior knowledge. It is obvious, therefore, that one must not look solely to technical magazine publications for the origin of an idea or a development, but rather to patent literature.

Mr. Morrogh next asks that evidence be submitted of prior reference to the use of magnesium and such metals "*that enable* the production of castings with the *graphite wholly in the nodular form in a matrix wholly ferritic or pearlitic according to the properties desired in the finished casting.*" (Editor's Note—Italics are the author's.)

This sentence is typical of much of the misinformation that has recently been published on the subject of nodular cast iron. Most of the microstructures and test results published have been culled from the most impressive rather than the average data. For example, Mr. Morrogh's photomicrographs in his own papers do not reveal the graphite *WHOLLY* in the nodular form in a controlled

itic structure in a matrix of either ferrite or pearlite, according to the properties desired in the finished casting.

Page 2 of the patent mentioned states:—"The tellurium addition is to be adjusted in accordance with the softness of the gray iron that is started with, and any gray cast iron for the purposes of the present invention may be defined as a cast iron in which the combined carbon does not exceed 0.8 pct. Without limiting the invention to an exact theory, it appears that the addition of tellurium not only influences the combined carbon, but also changes the graphite, reduces its length and even to nodular form, and thus improves the grain structure and the mechanical properties. When starting with a gray iron which normally will not give a pearlitic structure without a tellurium addition, the incorporation of tellurium in such iron produces a pearlitic structure, provided the amount is controlled, as hereinabove indicated. The present invention seeks to control the tellurium addition to normally gray cast iron containing free ferrite to produce an all-pearlitic iron, and to take up the effect of any tellurium added in excess of such all-pearlitic structure by the use of an alkaline-earth silicide or graphitizing substance."

OLIVER SMALLEY
President

Meehanite Metal Corp.,
New Rochelle, N. Y.

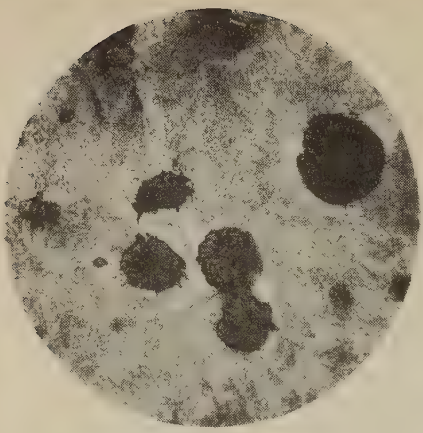

Fig. 1

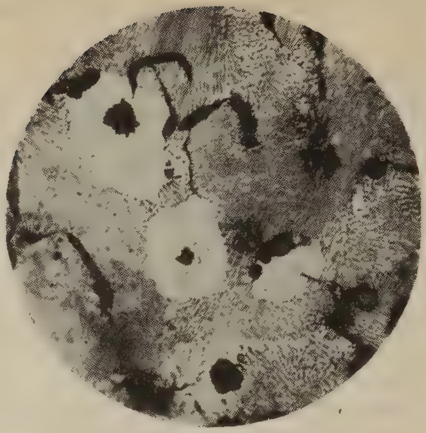

Fig. 2

matrix while his test results vary over an exceedingly wide range and do not show any measurable ductility without heat treatment. I am confident that the designing engineer would not venture to use the occasional spectacular test values given.

Further than this, while recent literature has revealed that the manufacture of nodular cast iron is commercially feasible, I question whether Mr. Morrogh can point to one foundry that is making this material in various sizes and form of castings where the graphite is *wholly* nodular and the physical properties are under precise control. I am not here implying that this will not be done in the near future, but I do believe published literature should not indulge in half truths.

Mr. Morrogh states that the idea that promoted his development of nodular graphite structure in cast iron came from the occasional detection of isolated graphite spherulites in ordinary commercial gray iron samples which had not been heat treated and led to the discovery of his cerium process. G. F. Meehan, with combined experience both in the malleable and gray iron fields, also made such observations. As a result of his long and continued research in the treatment of molten gray cast iron by the addition of suitable alkaline earth metals as meta-carbide stabilizing agents to prevent flake graphite separation, it was discovered that ductility could be achieved. In this work a second addition was made to the melt to result in the production of an iron of superior strength properties, and which when given a short-time anneal, would develop considerable ductility.

Mr. Meehan worked with many alkaline earth metals including especially magnesium, barium, lithium and calcium, both singly and in combination. I would refer Mr. Morrogh to Meehanite Patents Nos. 1,683,086; 1,790,552; 1,731,346 and 2,364,922.

No. 1,683,086 specifically refers to that improvement in the physical properties of gray cast iron by the use of an alkaline earth metal such as magnesium, barium or lithium, either used separately or in conjunction with a graphitizing agent. It further states "that these agents have been found to be of increased or intensified value if accompanied by nickel." Patent No. 1,790,552 deals with the addition of magnesium and also calcium in conjunction with such materials as nickel, chromium or titanium. Patent No. 1,731,346 deals essentially with the heat treatment of cast iron after treatment with magnesium or calcium and a silicide graphitizer to confer improved strength and ductility. This heat treatment consists of a short time anneal at 1650°F (16 hr followed by immediate cooling at room temperaure) and the following physical properties are recorded:

(1) Tensile strength 90,000 to 110,000 psi
Elongation 1½ pct
Reduct of area 1½ pct
Transverse strength 6000 to 8000 psi

For softer and more ductile castings the heat treatment is varied slightly, the cooling rate being slowed to 10°F per hr to 1000°F in the furnace before removal. Resulting strengths are:

(2) Tensile strength 65,000 psi
Elongation 6.9 pct
Reduction of area 10 to 12 pct
Transverse strength 4000 to 5000 psi

This invention states: "It has been discovered that this specially prepared product when heat treated produces results heretofore unexpected and a product of a radically different nature from anything previously obtained.

Claim 1 reads:

"In the process of manufacturing cast iron, the improvement, which consists in heat treating a casting resulting from molten metal to which has been added an alkaline earth metal (magnesium, barium, calcium, etc.) in an amount or in excess of that which would be neutralized by any element of the molten mixture."

Mr. Morrogh may retort to the above that these claims do not make direct reference to production of gray iron castings with the graphite *wholly* in the nodular form without any heat treatment being necessary. Equally, if Mr. Morrogh's original invention is so original, maybe he can show a patent claim for the manufacture of gray iron castings with the graphite *wholly* in the nodular form without heat treatment by the addition of 0.005 to 0.5 pct cerium.

For illustrative purposes, I submit a photomicrograph (fig 1), of nodular cast iron made from cupola iron by the Meehanite process, using calcium and magnesium in combination as the meta-carbide stabilizing agent followed by a silicide as a graphitizer.

In regard to the Meehanite Patent No. 2,364,922, using tellurium as the carbide stabilizer with calcium silicide as graphitizer, I submit the photomicrograph shown in fig 2.

I fully appreciate the importance of this subject and the interest of your readers, and I am grateful for the opportunity to present in your columns these statements.

OLIVER SMALLEY
President

Meehanite Metal Corp.,
New Rochelle, N. Y.

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Morrogh's Comments

(CONTINUED FROM PAGE 101)

irons and this led ultimately to the discovery of the cerium process.

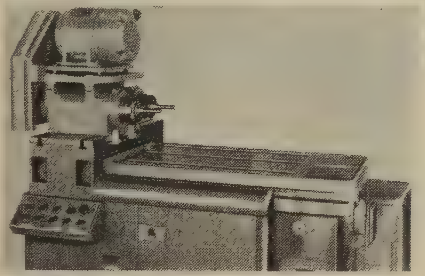
To complete the references already given, it should be noted that the occurrence of nodular graphite in the as-cast cast iron was noted and illustrated by Krinitsky[7], Morrogh[8], Morrogh and Williams[4, 9] and then the cerium process was described and illustrated in three papers[10, 11, 12]. In the discussions of two of these papers[10, 12], the American discovery of the magnesium process was announced. There then

(CONTINUED ON PAGE 149)

New Production Ideas . . .

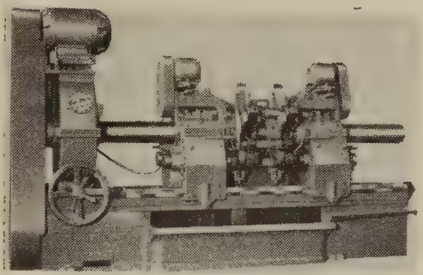
New and improved equipment described this week includes boring and milling-centering machines, a hydraulic automatic lathe, metal shears, a form and cut-off machine, a tube cut-off die for punch press operation, deburring-finishing barrels, spotweld nuts and screws, punch and die units, an external hone, an annealing gas generator, and industrial mixers.

CONTROL versatility of new precision boring machines for accurate, high production boring, turning, and facing operations permits instant selection of any one of three automatic cycles and convenient inching control for setting up. Electro-hydraulic controls offer quick response to table and tooling movements, speeding up machine output. All push buttons are grouped in one inclined panel for easy reach and vision of the operator. Cartridge type spindles have permanently lubricated, preloaded bearings. Ways have automatic lubrication and spindle motors are mounted above for convenient maintenance and shorter V-belt drives. The machines are available in several models of both single and double end types. *Covel Mfg. Co. For more information, check No. 1 on the attached postcard.*



Milling-Centering Machine

CONTINUOUS production combined with centering operations make possible the continuous rough and finish milling and centering of workpieces simultaneously on both ends. This design features the Mac milling and centering machine. Size of the workpiece determines the number of stations in the rotary drum type fixture. During the cycle of the machine, each station picks up the centering heads. While they are being carried upward the centering spindles are fed into the work by stationary cams to produce a center of predetermined depth, then retracted and released. Centering heads are returned to their low position by gravity. Workpieces varying from 12 to 45 in. long can be accommodated on a machine with a standard length bed. When six stations are used workpieces up to 4 in. diam can be taken. Fifty pieces per hr can be produced with a 10 imp cutting speed. Where eight station fixtures are provided workpieces up to 2½ in. diam can be produced at the rate of 65 pieces per hr with a 10 ipm cutting speed. *Davis & Thompson Co. For more information, check No. 2 on the attached postcard.*

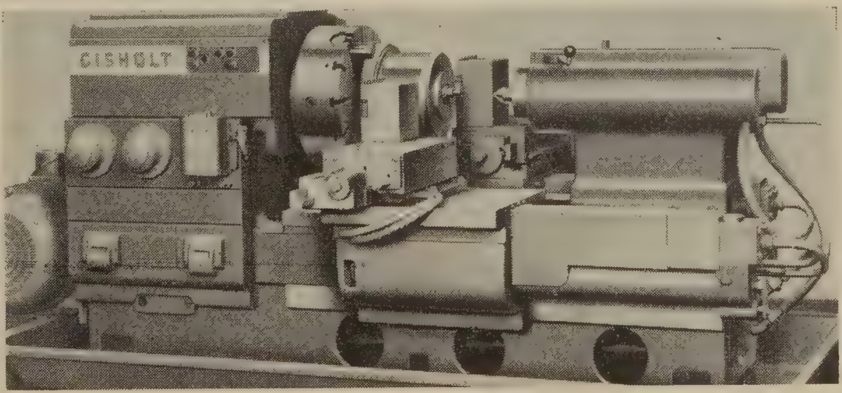


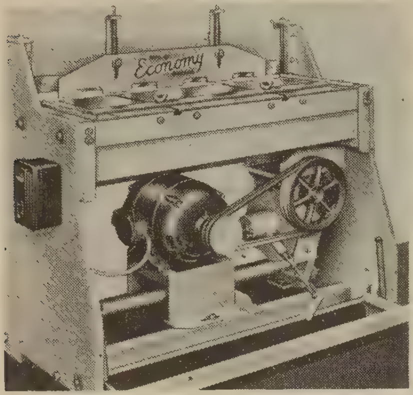
Hydraulic Automatic Lathe

THE new No. 24 hydraulic automatic lathe is for heavy duty work and swings 35½ in. over the bedways. Standard equipment consists of front and rear carriages, each with its own auxiliary slide. Each slide has its own feed pump and controls and can be mounted to traverse and feed at any angle to the spindle centerline. Spindle speeds are selected by pickoff gears and the starting and stopping of the spindle is part of the automatic cycle. Setup is simplified by hydraulic controls that permit the operator to make the slides run separately, stop at any point, back up or continue the cycle. *Gisholt Machine Co. For more information, check No. 3 on the attached postcard.*

Metal Shear

A NEW power-operated 16 gage capacity metal shear incorporates a self-contained direct drive unit. Flywheels, brakes, fast moving shafts and cam-operated connecting rods are eliminated. The drive unit consists of precision cut hardened steel worm and bronze worm gear units, sliding four-jaw clutch, driver and cam, giving the shear a positive, smooth, direct action at a slight pressure on the foot treadle. One complete revolution, in which the knife bar is brought down for the cut and returned to top position, is accomplished each time the foot treadle is depressed. Operating cycle of 60 strokes per min can be varied. Available in 36, 42, and 52 in. cutting lengths, the shear is powered by a 2 hp motor in the 36 in. model, and 3 hp in the 42 and 52 in. sizes.





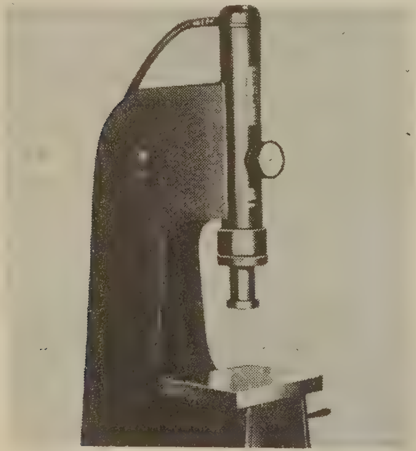
Acme Equipment Co. For more information, check No. 4 on the attached postcard.

Tool Post Bolts

TOOL post bolts for automatic screw machines are made in three sizes: ⅜ in. for No. 00, 7/16 in. for No. 0 and ½ in. for No. 2 size screw machines. They are extra tough and heads will not pull out under any ordinary use. Nuts are accurately made to assure Class 3 fit with bolts. Washers are made with bearing surfaces ground parallel. They are made from high grade alloy steel, heat treated for maximum properties. *Boyar-Schultz Corp. For more information, check No. 5 on the attached postcard.*

Motorized Bench Press

AVAILABLE in 5, 8, 13 and 20-ton capacities, a new motorized hydraulic bench press has a 3 hp, 220-440 v, 3 phase 60 cycle motor, a hydraulic pump, valves and piping enclosed in the housing. A hand lever actuates and releases the hydraulic ram. A push button switch on the side of the housing controls the motor-driven pump. Ram stroke is 9 in. Downstroke is 100 ipm and return travel 125 ipm on the 5-ton press, but slightly less on larger sizes. Height of throat is 10¾ in. Platen is 10x16 in. *Munton Mfg. Co. For more information, check No. 6 on the attached postcard.*



Tube Cutoff Die

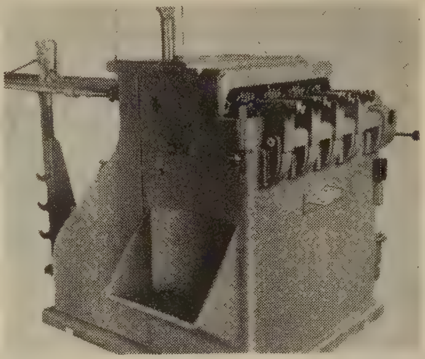
STRAIGHT-CUTTING of tubing into any desired lengths with a minimum of burr and no perceptible distortion can be accomplished with a new arc fit tube cutoff die designed for punch press operation. The cutting speed depends on the punch press speed and the length of the tube to be cut. Ten thousand cuts per hr are possible, it is claimed and round, square, rectangular or hexagon tubing up to 4 in. OD can be cut. Interchangeable die blocks permit quick changeover from one diameter to another with little downtime. Various sizes can be cut with the same die. *Vogel Tool & Die Corp. For more information, check No. 7 on the attached postcard.*

Insulated Gage Blocks

LOWERED cost of carbide blocks and increased precision of steel blocks are advantages claimed for the new Thermo-Guard gage blocks. Thermo-Guards inlaid in 2, 3, and 4-in. steel and carbide blocks completely insulate the block from the heat of the hand. The necessity of allowing blocks to cool off after handling and before making a critical inspection is eliminated. *Webber Gage Co. For more information, check No. 8 on the attached postcard.*

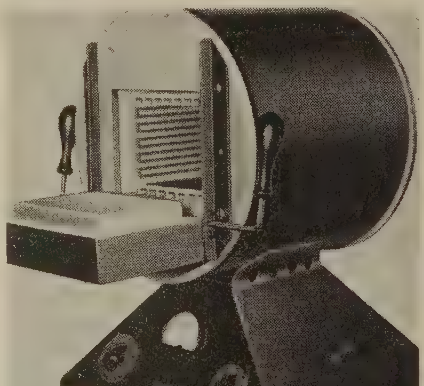
Form and Cutoff Machine

FOR high speed external forming, grooving, beveling, chamfering and cutting off of bar stock, a new four-spindle machine, the Bar-Matic, has been developed. The bar feed arrangement uses low air pressure for rapidly feeding four 12-ft bars simultaneously to four adjustable positive stops. Four sets of forming and cutoff tools are mounted on a horizontal slide that is cam-operated longitudinally. Spindle speeds are infinitely variable and range from 900 to 2000 rpm. Cycle changes are obtained by hand wheel control without stopping the machine. The Bar-Matic is rated at 1400 to 2400 pieces per hr. Capacity is ⅝ in. diam with cutoff length to 6⅝ in. *Producto Machine Co. For more information, check No. 9 on the attached postcard.*



Muffle Furnaces

MUFFLE furnaces designed for general laboratory requirements such as drying of precipitates, fusions, ignitions, heating metals and alloys, enamel firing, heat treating and for general experimental work, are housed in a cylindrical shell mounted on a pyramidal base with line contact between them allowing free circulation of air and eliminating trapped heat in the base. Improvements include instruments and controls at approximately room temperature and improved insulation that cuts radiation loss. There are 36 steps of control through a tap-changing transformer. Instruments are accessible through removable panels and multiple heating units are re-



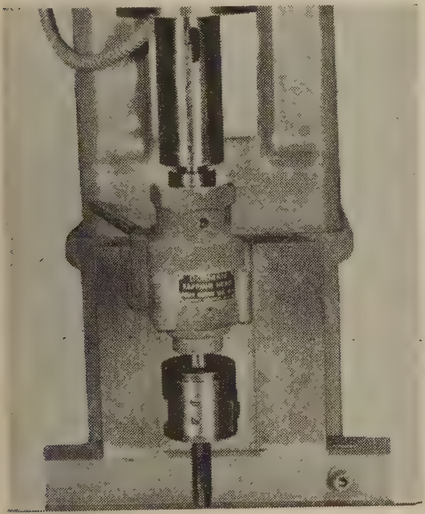
placeable. *Hevi Duty Electric Co. For more information, check No.* 10 *on the attached postcard.*

External Hone

THE Delapena external hone produces precision external diameters. It is designed to correct out-of-roundness, remove taper, and produce micro-finishes. The external hone consists of a body into which a guide block is fitted, and stone holders to suit the diameter of the work to be honed. Three types of stones are supplied for roughing, finishing and polishing operations. The stones are mounted on holders for mounting in the hone body. A truing stick provides proper alignment of the stones with respect to the guide block. This honing equipment covers diameters between 1/16 and 1 in. *Motch & Merryweather Machinery Co. For more information, check No.* 11 *on the attached postcard.*

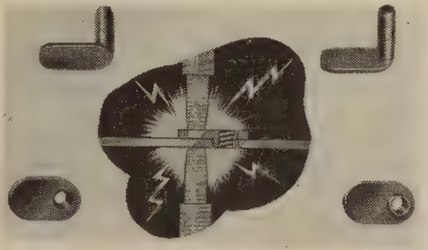
Tapping Attachment

A NEW high speed automatic reverse tapping attachment with full ball bearing construction is compact, 3½x5½x9 in., and weighs 11 lb. Capacities for hand or machine screw taps range from ⅜ to ⅞ in. and pipe taps from ¼ to ½ in., both in steel. The tapper has a clutch built in to hardened drive and reverse gears. A full floating chuck jaw prevents tap breakage caused by misalignment of tap and hole. *Dorman Machine Tool Works. For more information, check No.* 12 *on the attached postcard.*



Spotweld Nuts and Screws

A LINE of spotweld nuts and screws that can be applied to sheet metal appliances in factories equipped with rocker-arm spot welders or press type projection welders is now available. Seven sizes of spotweld nuts range from No. 8-32 up to and including 5/16-18 threaded hole. There are 63 production sizes of spotweld screws. The nuts and screws are designed for use with the commercial thicknesses of sheet steel. Spotweld nuts are made of low carbon steel; the screws are made of low carbon steel, high brass, or stainless steel. *Ohio Nut & Bolt Co. For more informa-check No.* 13 *on the attached postcard.*

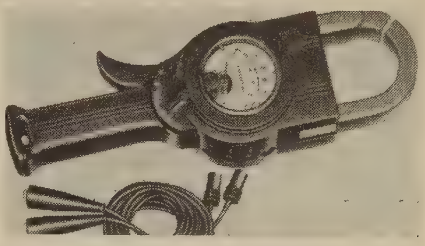


Midget Rotary Drill

FOR use in drilling up to ¼-in. holes in all materials and metals, a new midget rotary drill is available in speeds of 1200, 2400, and 4800 rpm. It weighs 2 lb including a ¼-in. capacity three jaw chuck, and is 6⅜ in. long. An extra large oil reservoir inside the pistol grip handle provides constant lubrication through an automatic oiler while the drill is in operation. Power is supplied by an internal blade type vibrationless motor. *Master Pneumatic Tool Co. Inc. For more information, check No.* 14 *on the attached postcard.*

Clamp Ammeter-Voltmeter

A NEW ac clamp ammeter and voltmeter, with five current ranges up to 1000 amp, and three voltage ranges up to 700 v, is designed to measure alternating currents and voltages without interrupting electrical service. Current measurements are made by placing the clamping jaw around the conductor. Jaws will accommodate conductors, bare or insulated, up to 2 in. diam. Voltage measurements are made by connecting a set of clip-on voltage leads to the line and to the screw-type terminals in the side of the meter. Current and voltage measurements can be made almost simultaneously by rotating the thumb-selector switch to either the ampere or volt position. *Weston Electrical Instrument Corp. For more information, check No.* 15 *on the attached postcard.*

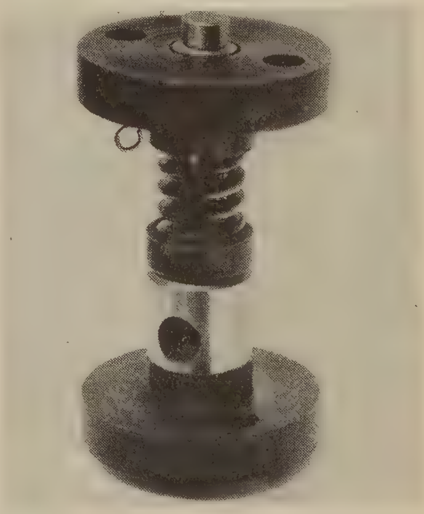


Lightweight Grinder

A NEW air-powered portable grinder is designed with magnesium castings for lightness and a steel housing for protection. A conveniently located throttle controls starting. Grinders are available in spade and straight handle models, 6 and 8-in. sizes, with a range of speeds including 4200, 4500 and 6000 rpm. Speed is governor-controlled. All models have ⅝ in. x 11 spindle thread. The tools are furnished with a grinding wheel or wire brush. *Aro Equipment Corp. For more information, check No.* 16 *on the attached postcard.*

Punch and Die Units

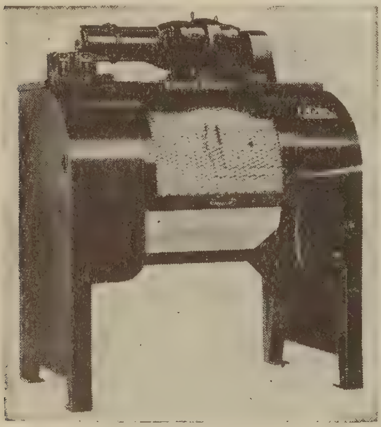
INCREASED production and economies are claimed for Holemaster punch and die units that space holes closer together, making it possible to handle more operations with fewer dies. Shut height of these units is 3¼ in. and parts are interchangeable. Units are sal-



vageable from job to job and can be used over. Dies are drilled and tapped to provide for attachments to air lines for automatic slug ejection. Punch and die units are available in a wide range of stock hole sizes and shapes. *Great Western Tools, Inc. For more informa- check No. 17 on the attached postcard.*

Deburring-Finishing Barrel

A NEW deburring and finishing barrel, Supersheen Model DB-200, has variable barrel speed of 6 to 30 rpm. A roll-away perforated hood permits positioning of barrel with the hood down, assuring maximum safety. There are no protruding parts or handles. Ease of operation is assured with a positive magnetic break that allows inching the barrel into position. Doors are cam-operated for quicker opening and closing. Forward and reverse safety switches are provided. This model is available with Neoprene lining or unlined. *Almco Div. Queen Stove Works, Inc. For more information, check No. 18 on the attached postcard.*

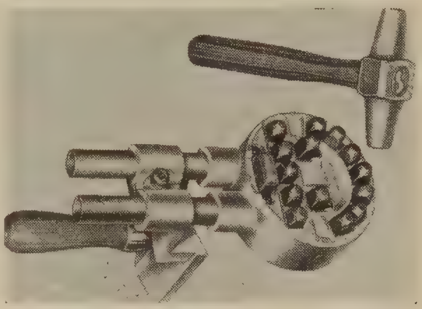


Air Valve

A NEW air valve, the Air-Saver, makes possible greater tool efficiency because it removes metal chips and other scrap material quickly and cleanly. Valves may be mounted in any position to operate at any angle, and are unaffected by machine vibration. The Air-Saver is a precision-built, leakproof unit designed to give split-second air control at all times. Ample air volume is possible for operation of multiple or single jets. Valves are built into new machine tools or mounted on equipment already in operation. *Palmer-Shile Co. For more information, check No. 19 on the attached postcard.*

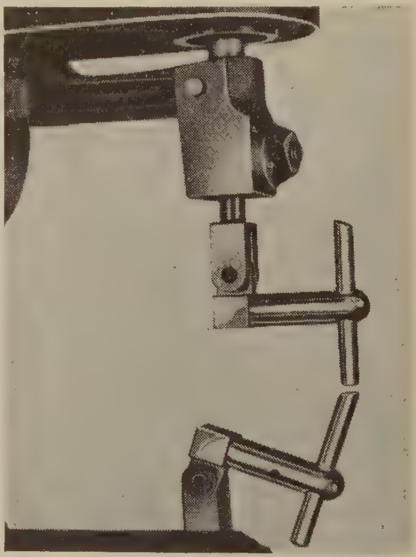
Axle End Marker

FOR marking end faces of railroad car axles, forged wheel blocks, and other large rounds, a marker holder cast from a tough-grade alloy aluminum provides long service life and light weight. Any combination of characters and sizes is furnished. The holder can be adjusted to center on different size diameters, and a rounded rib design around holes protects them from off-angle blows. Characters are quickly inserted and removed by hand, but remain securely in place during stamping. *M. E. Cunningham Co. For more information, check No. 20 on the attached postcard.*



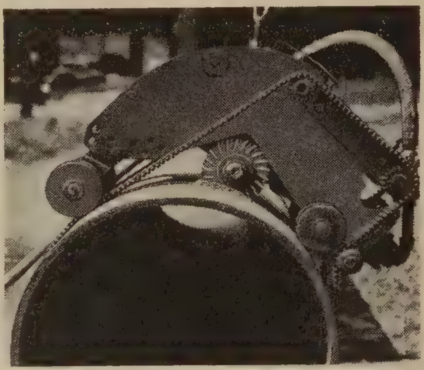
Electrode Holder

A NEW bench type welding electrode holder offers versatility in adjustment, using standard packaged electrodes. It has a full 180° range of head adjustment with positive locking in any position under full operating pressures. Heads are available for 30° or 90° electrode angle and the electrodes have positive, non-slip adjustment in the holder head over their entire length of 1¾ in. Electrodes are available in Elkaloy A and Mallory 3 metal, and are packaged in 1/16, ⅛ and 3/16 in. diam. *R. R. Mallory & Co., Inc. For more information, check No. 21 on the attached postcard.*



Pipe Saw

CAST iron and steel pipe from 12 to 48 in. diam can be cut with a new air-powered pipe saw at the rate of 2 ipm. The machine uses a high speed steel milling cutter that leaves clean cut milled edges and requires only 85 lb of air pressure for operation. Changes in adjustment for different pipe sizes are made by setting guide rollers and altering the two travel-chain lengths. The saw is strapped to the pipe by two chains that act as a flexible ring gear for positive feed and automatically compensate for pipe swells and irregularities. As it cuts, it travels around the pipe making the cut in one complete rotation. The pipe saw is portable, weighing 265 lb, and can be handled and set up by two men in about 15 min. *E. H. Wachs Co. For more information, check No. 22 on the attached postcard.*



Annealing Gas Generator

AN annealing gas whose composition can be accurately varied at will can be produced with the Nitroneal generator that effects in one operation an interaction of anhydrous ammonia with air in the presence of an Engelhard catalyst to form nitrogen and hydrogen. The hydrogen content is controlled within a range of ½ to 25 pct to meet the requirements of any particular furnace load, and maintained at the determined figure within close tolerance. Air and liquid ammonia are fed to the generator at room temperature and at pressures of approximately 10 to 20 lb, respectively. The finished annealing gas comes from the unit at only slightly above room temperature at a pressure of 1 lb or more, as desired. It is saturated with water vapor that is readily removable by any standard dryer. The generator is a self-contained unit requiring no power supply except for instrumentation, and is available with capacities of finished gas ranging from 100 to 10,000 cu ft per hr. *Baker & Co., Inc. For more information, check No. 23 on the attached postcard.*

Notcher and Punch

TWO new hand tools for sheet metal work are a dovetail notcher and a snap-lock punch. The notcher provides rapid, single-action dovetailing when installing collars, stubs, Y-joints and the like. The operator is able to notch clean dovetails in mild steel up to 20 gage and fold tabs down square in one motion. The snap-lock punch produces uniform ears that snap under and lock firmly on the seamed edge of a joining piece. Capacity is up to 20 gage mild steel. Both tools feature spring-return jaws for easy operation; each is 8½ in. long and weighs 1 lb. *Whitney Metal Tool Co. For more information, check No. 24 on the attached postcard.*

Portable Paint Spray Unit

PLANT maintenance painting is simplified with the new, lightweight, portable DP paint spray unit that delivers 40 lb working pressure in ample volume to operate standard spray guns. It operates from any 110-120 v ac line. The compressor is 15⅞x11½x7½ in. at the base and its over size cooling fins provide continuously cool operation. There are no exposed moving parts; the motor has a safety cut-out overload switch. The unit handles enamels, lacquers, house paint, shellacs, varnishes and other coatings. *Binks Mfg. Co. For more information, check No. 25 on the attached postcard.*

Bushing Adapters

AN adapter for Taper-Lock bushings is recommended for use where it is more convenient to use a straight bore in the hub than to drill and taper bore hubs to accommodate the bushings. The adapters consist of a taper bored sleeve that fits into the straight bore of the hub. The bushing slips inside the adapter that is tapped to receive the bushing screws. In tightening the bushing screws the adapter is expanded against the hub bore and contracts the bushing upon the shaft with the firmness of a press fit on all surfaces. *Dodge Mfg. Co. For more information, check No. 26 on the attached postcard.*

Metal Filter Cloth

A NEW metal filter cloth identified as Michigan Specification 8700 combines the advantage of very fine particle retention and favorable flow capacity with strength and corrosion resistant qualities. It is suitable for applications where fine straining action combined with free flowing qualities are essential. The cloth is of twilled Dutch weave available in Monel and Chromel C. It is woven to special order in various alloys, including stainless steel and high nickel alloys. *Michigan Wire Cloth Co. For more information, check No. 27 on the attached postcard.*

Industrial Mixer

A BELT-TYPE portable industrial mixer with its motor hanging on the outside of the mixing tank out of the path of harmful mixing fumes and spray, is in perfect balance because the weight of both mixer and motor is carried below the center of gravity. The possibility of oil or grease dripping from the motor into the mixture is eliminated. Mixing speeds can be obtained by simple pulley changes. Interchangeable belts and pulleys on this Marvel Mixer make adjustments possible for light, medium or heavy materials. Propellers are stainless steel, aluminum, iron, bronze, Monel and other metals. *United Electric Motor Co. For more information, check No. 28 on the attached postcard.*

Immersion Thermometer

FOR die casters, slush casters, and lead and zinc refiners, a new thermometer comprised of a stainless steel cylinder 5 to 9 in. long that encloses the temperature sensitive element, and a 30-in. steel tube leading to the instrument dial that has a 240° scale range. The thermometer is gas filled and is independent of change in ambient temperatures. Standard ranges provide maximum readings at 400° to 1500°F. *Electric Paint & Varnish Remover Co. For more information, check No. 29 on the attached postcard.*

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FORGED STEEL STRAINERS for steam systems, pulp mills, byproduct coke plants, etc., are described in bulletin 712. The units have an ASA rating of 600 lb at 850°F for steam, oil or vapor, and a hydraulic rating of 1440 lb at 100°F. Installation, maintenance and cleaning are described. *Edward Valves, Inc. For more information check No. 30 on the postcard.*

UNIVERSAL TESTER with four ranges, maximum of 100 lb, is discussed in bulletin M. The scale is available in ounces, tenths pounds or kilos. Gripping jaws will handle specimens up to ⅛ in. thick by 1¼ in. wide. Compression cage will accommodate specimens up to 3 in. square by 4½ in. tall. *W. C. Dillon & Co., Inc. For more information, check No. 31 on the postcard.*

STAINLESS STEEL CASTINGS periodical gives application descriptions and technical data on special alloys used. First issue deals with diffusers for industrial burners cast in heat resistant stainless steel. Magnetism in austenitic stainless is discussed. *Cooper Alloy Foundry Co. For more information, check No. 32 on the postcard.*

PORTABLE BELT CONVEYERS, made in lengths of 25, 30 and 35 ft with plain or cleated belts, are discussed in bulletin 363. For bulk materials weighing 100 lb per cu ft, capacities range up to 200 tons per hr. Belt width is 24 in. *Barber-Greene Co. For more information, check No. 33 on the postcard.*

SHORT CENTER DRIVES for compressors, fans and pumps are discussed in handbook. Synchronization of belt tension with load is said to reduce effect of centrifugal tension, compensate for belt length variations and maintain an efficiency of 97 to 98 pct over a wide range of loads and tensions. *J. E. Rhoads & Sons. For more information, check No. 34 on the postcard.*

METAL PRIMER, applied directly over rusted surfaces, is described in folder. A phosphate-type coating is obtained. Preparation time is reduced since rust does not have to be removed, the iron oxide being changed to iron phosphate. *Rusticide Products Co. For more information, check No. 35 on the postcard.*

DISTRIBUTION TRANSFORMER which features a core wound of cold-rolled steel and which has an inherent low exciting current is reported in catalog 349. Transformers are made in sizes 25 kva and below, 14,400 v and below, single phase, 60 cycles. *Pennsylvania Transformer Co. For more information, check No. 36 on the postcard.*

CYLINDERS, operated with air, water or hydraulic power and in bore sizes from 1½ to 8 in., are described in booklet. Space savings due to tie-rodless construction are a feature of the cylinders. Operation to 1500 cycles per min continuous duty is guaranteed. *Ortman-Miller Machine Co., Inc. For more information, check No. 37 on the postcard.*

ROLLER CHAIN catalog uses photomicrographs, engineering drawings and component photos to illustrate construction, metallurgical characteristics and other features of the chains. Specification tables for single and multiple chains are included. *Atlas Chain & Mfg. Co. For more information, check No. 38 on the postcard.*

ELEVATORS AND CRANES are described in 36-page bulletin 10482. Elevators include portable hand and electric-operated types with load capacities from 500 to 5000 lb and lifting heights up to 36 ft. Portable cranes with fixed or revolving bases and electrically operated hoists are also shown. *Barrett-Cravens Co. For more information, check No. 39 on the postcard.*

HEATING AND COOLING COILS, constructed from embossed metal plates welded together, are discussed in bulletin. Coils are available in cold-rolled steel, stainless and Monel depending upon the application. Typical uses are in plating, bonderizing, pickling, degreasing and anodizing tanks. *Udylite Corp. For more information, check No. 40 on the postcard.*

FASTENINGS catalog lists bolts, nuts, screws, washers, rivets and nails in brass, naval bronze, silicon bronze, copper, Monel and stainless steel. More than 6000 items are covered. Data on thread lengths, stud dimensions, weights, etc. are included. *H. M. Harper Co. For more information, check No. 41 on the postcard.*

DUCTILITY TESTING equipment is described in bulletin 39. Hand-operated, motor-driven and automatic machines are covered. Accessory units for universal testing machines, permitting ductility testing, are also discussed. *Tinius Olsen Testing Machine Co. For more information, check No. 42 on the postcard.*

POWER WHEELBARROW for industrial and construction work is dealt with in bulletin. A standard 4-hp gasoline engine powers the barrow at speeds of 2 to 4 mph, both forward and reverse. Rated hopper capacity is 10 cu ft or 1200 lb. Other features are controlled gravity dump and a direct steering device. *Kwik-Mix Co. For more information, check No. 43 on the postcard.*

SPOTWELD NUTS AND SCREWS are discussed in bulletin 492. Pins, spade screws and modified designs are also described. Items are available in low carbon steel, stainless steel or high brass. Class 2 fits are standard. Parts can be made for curved surface work. *Ohio Nut & Bolt Co. For more information, check No. 44 on the postcard.*

ABRASION RESISTING STEEL uses are illustrated in booklet. Data on properties of the steel as well as its machinability and formability are given. Included in the uses described are limestone chuting, picking tables, loading booms, ore spouts, vibrating screens and coke-handling equipment. *United States Steel Corp. For more information, check No. 45 on the postcard.*

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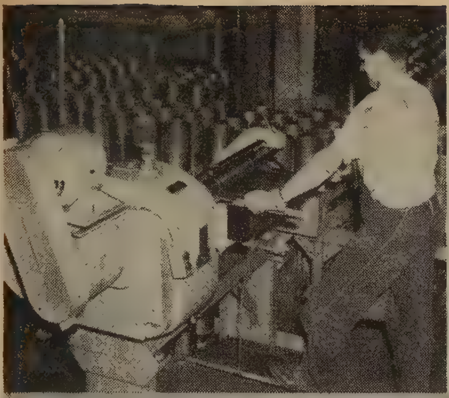
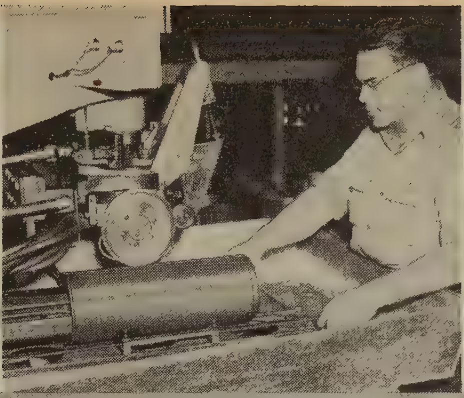
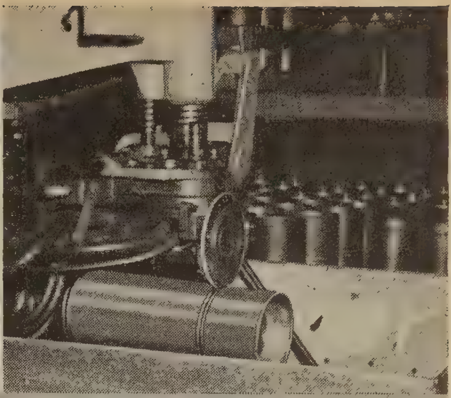


Rolling silicon bronze to the exact diameter before welding



Resistance welding of longitudinal seam



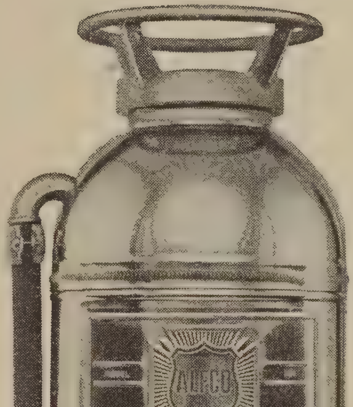
The bottom is resistance-welded to the shell

REVERE SILICON BRONZE IN RE-DESIGNED EXTINGUISHER

Everyone is familiar with the 2½ gallon fire extinguisher that is operated by turning bottom up. It is to be found in almost every factory, office and school. With it, countless fires have been put out, lives, property, jobs, money saved. Such a standard product tends to be taken for granted; most people naturally assume that it has reached its final perfection. Not so American-LaFrance-Foamite Corp., which some time ago decided to re-design its Alfco extinguishers in the light of the newest technological developments. To the user, the new extinguishers are definitely improved, being free from rivets, 4½ pounds lighter, and much more handsome. To the company, the product has been bettered in other ways, and is more efficiently produced.

Working out this extensive program required careful consideration of the relationships between design and materials, and materials, methods and machines. Alfco wished to abandon rivets and go to seam welding, among other things. Silicon bronze was selected as the material, because that can be easily resistance-welded, possesses strength of mild steel together with the corrosion resistance of copper. Revere and Alfco got together and jointly set up the time, temperature and pressure requirements for clean, sound welds. It was also necessary for Revere to establish the proper tempers for the body sheet so that it will more than withstand the Underwriters' pressure test, but still be formable into a cylinder with beads that locate the top and bottom domes. Similarly, tempers had to be selected for the sheet to be drawn into the domes. In all these and other activities the accumulated knowledge and experience of the Revere Technical Advisors, the welding section of the Research Department and of three Revere mills were used. Finally, the Research Laboratory tested the first production extinguishers to make sure that annealing practices were adequate.

Revere considers this an outstanding example of the benefits possible when a manufacturer and supplier collaborate on mutual problems. You are invited to consider Revere not only as a source of nonferrous metals, but of know-how in their selection and fabrication.



The new Alfco Extinguisher, made by American-LaFrance-Foamite Corp., Elmira, N. Y.

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Assembly Line . . .

WALTER G. PATTON

• Ford strike has already cost $20 million in wages and more than 37,000 vehicles . . . K-F is again using a second line . . . Welding playing an increasingly important part in new cars.

DETROIT—As this is written the Ford strike is going into its second week. If hope for an early settlement is justified, the reasons for an optimistic view of the situation are hard to find.

Negotiations were renewed this week at the Rackham Bldg. but admittedly no progress has been made. Meanwhile, Henry Ford II has categorically rejected Walter Reuther's offer to hire the local baseball park and debate the subject before the 50,000 Ford employees who might gain admission. Mr. Ford said such a performance would settle nothing inasmuch as the present controversy called for the judgment of a technically qualified production expert. In the midst of this week's negotiations, Mr. Reuther made a visit to Philip Murray in Pittsburgh. The union claimed the trip was made to keep a "previous engagement," denying there was any connection with the Ford strike.

The present cost of the strike is large but this may be only a fraction of the loss to be inflicted on Ford employees and Ford suppliers alike if the stoppage is prolonged. At the moment nearly 100,000 Ford employees or about two thirds of the entire Ford organization have been idled. Production at the Rouge has come to a halt, of course. With the truck and tractor lines closed down at Highland Park, activity there is, for all practical purposes, at a standstill. Only about 100 out of 3600 employees at Mound Road were still working. Canton Forge plant is still operating but the end of this week will see a shutdown if the strike is continued. It is only a matter of time, of course, until all the Ford assembly lines throughout the world will be stopped.

It has been estimated that Ford suppliers are presently losing $4 million in business every day. More than 3000 tons of steel that would ordinarily be produced at the Rouge are being lost. Lost vehicle output thus far has been placed at 37,000. An additional 5800 units can be added for every day the strike is continued.

The price management is paying is matched, of course, by labor. Wages lost up to the present time aggregate $20 million. The union is paying out $5000 per day to maintain its picket lines. About 3000 pickets, on an average, are on duty but the union is trying to reduce this by half.

NOT the least trying of Ford's problems at the moment is handling the steel shipments which normally come into the plant. To attempt to warehouse all the steel, of course, is out of the question. In many cases it is necessary to ask for deferments on delivery. At the same time, some items are still critical and it is desirable to warehouse such items so that the company will emerge from the strike with balanced steel stocks. Much the same problem presents itself with respect to all incoming Ford supplies.

While it may not be true as charged that the Ford strike has been planned and precipitated by the Commies, it is generally admitted that the Commies would have found it difficult to develop a situation that is more to their liking: (1) The huge Ford plant is closed tight and may pull a number of its suppliers plants down with it; (2) Walter Reuther is undoubtedly in one of the tightest spots he has occupied for some time; (3) an issue has been put to management on which many informed sources agree it will be exceedingly difficult—if not unwise—for the company to back away.

Incidentally, labor experts have placed the cost of the pension plan that was to be demanded of Ford at 47¢ per hr. These demands were originally scheduled to be presented to Ford this week. However, Ford officials have made it clear that no contract bargaining will be permitted until the present strike ends.

The costs were estimated by various Detroit representatives of insurance companies who were called in recently by the UAW. The union-sponsored plan calls for company-paid pensions for Ford workers with 25 years' service of $100 per month starting at the age of 60. The cost of this plan was placed at 18 pct of payroll or 29¢ per hr. The estimated cost of group insurance to be demanded by the UAW-CIO is 8¢ per hr. Restoration of the workers' purchasing power to the 1946 level would cost an additional 10¢ per hr, it is estimated. Adding the three figures together gives the estimated cost of 47¢ per hr to meet the union's original 1949 wage demands.

•

Kaiser-Frazer Sales Up

Detroit

• • • **Kaiser-Frazer** has increased its production by more than 30 pct and the company's second final assembly line has been placed in operation again. According to Clay P. Bedford, executive vice-president, retail sales have doubled during the past 30 days. At the present time, sales are exceeding production by a good margin so that dealer stocks in the field have been reduced substantially.

According to Mr. Bedford, reception of the new Kaiser Utility model has "exceeded all expecta-

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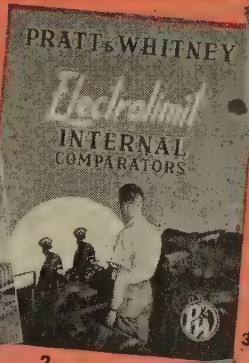
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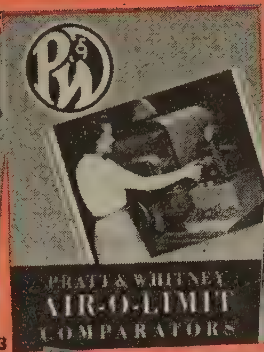
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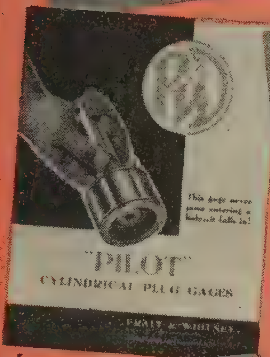
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"PILOT"
CYLINDRICAL PLUG GAGES
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P&W
THREAD GAGES
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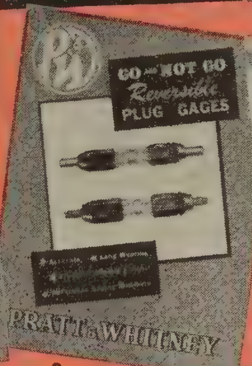
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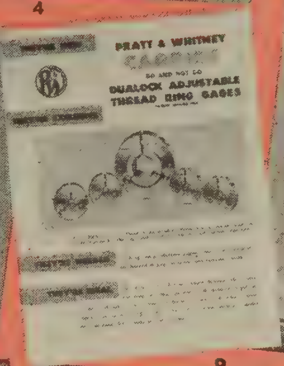
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THREAD RING GAGES
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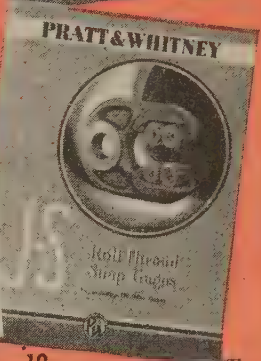
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Roll Thread Snap Gages
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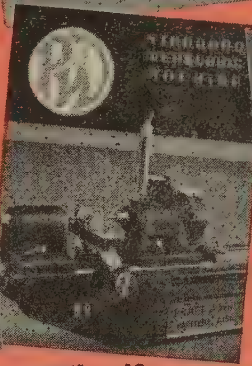

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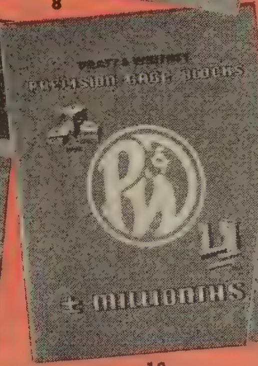
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PRECISION GAGE BLOCKS
P&W
MILLIONTHS
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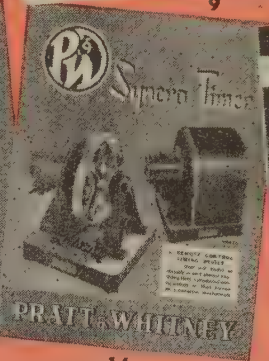
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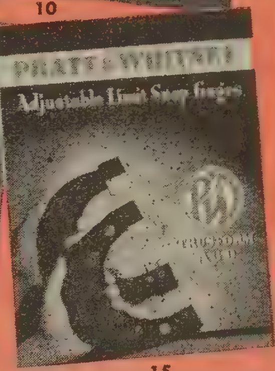
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tions." More than 50 pct of the present production is K-F's new multi-purpose model, the Traveler.

Kaiser-Frazer expects a substantial penetration of the automobile market with its new Utility model. At Joliet, Ill., it is reported, the police department has converted its fleet of patrol cars to Traveler models. Other occupational groups which have shown significant interest in the new model are interior decorators, morticians, carpenters, appliance dealers, farmers, salesmen, and experimental engineers, according to the K-F sales department.

Most owners, K-F says, are using the new utility model as a combination sedan for business and family transportation, while a number of others have purchased the car with the idea of employing it mainly as a camping and recreational vehicle.

• • •

10,000 Welds Required For Today's Typical Car

Detroit

• • • **In the latest issue** of Automobile Facts published by the Automobile Manufacturers Assn. the growing importance of welding in automobile construction is appropriately emphasized.

According to Automobile Facts, the investment in welding equipment for postwar cars has been at the rate of three times the prewar total. One firm alone, it is reported, has spent $9 million for welding tools for its 1949 cars.

The new equipment is said to have cut by about 75 pct the time required for most welding jobs.

It is argued that without the new welding equipment, today's automobiles, with their complicated styling and reinforcement at many body points, would be impossible from a cost standpoint.

A typical car today has as many as 10,000 welds compared with about 6000 welds employed on the average 1941 car.

Today's automatic welding press equipment may be 8 ft wide and 10 ft long. These new presses can fire up to 300 resistance-weld guns in less than a second. The cost of some of these units exceeds $100,000.

The publication points out that eight different types of joining are used in making today's motor cars. These methods include the electric arc, submerged arc, atomic hydrogen, induction brazing, electric furnace brazing, heliarc, helispot, and acetylene torch methods. Heliarc welding is being used extensively on exterior parts like fenders and bumpers where a smooth finish is needed. One large producer is joining the exhaust pipe to the muffler using a submerged arc process. Another firm is using argon heliarc torch for exterior fender and bumper welds. This eliminates pitting of the metal, it is reported.

Electric furnace brazing is expected to play an increasingly important part in automobile manufacture as more automatic transmissions are introduced. It is generally agreed that Chevrolet will undoubtedly use a brazed assembly for its new torque converter units. The present Buick Dynaflow employs cast members. Packard, it is expected, will use either cast or brazed assemblies for its new transmission units.

AS FAR AS YOU CAN SEE: *Shown in the photograph are more than 1500 gold-colored cars which were driven away from the Packard Proving Grounds near Utica, Mich., recently by Packard dealers from every state in the union. The celebration marked Packard's 50th year in the automotive industry.*

Discusses Possibilities Cold Synthetic Rubber

Niagara Falls, Ont.

• • • **In addition** to its use in rubber tires, "cold" synthetic rubber has interesting possibilities for highway surfacing, Dr. R. P. Dinsmore, vice-president in charge of research and development for the Goodyear Tire & Rubber Co. said here recently.

Dr. Dinsmore told his audience that under present price structures, natural rubber can be delivered in New York at a cost below which synthetic can be presently manufactured. Dinsmore said that about 32 pct of the rubber consumed last year was GR-S type.

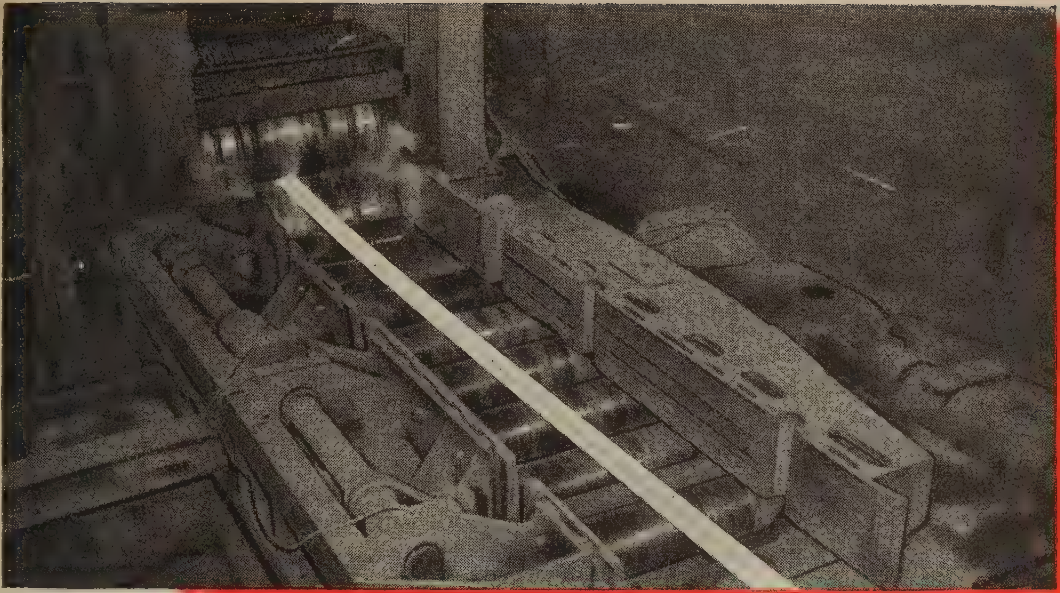
Summarizing his views, Dr. Dinsmore said, "There is no doubt, that when used with special carbon black, 'cold' rubber gives better treadwear. We have yet to learn whether other drawbacks will offset this advantage over crude, or indeed, whether similar effects cannot be produced with crude rubber itself," he concluded.

Sales Rise But Net Down

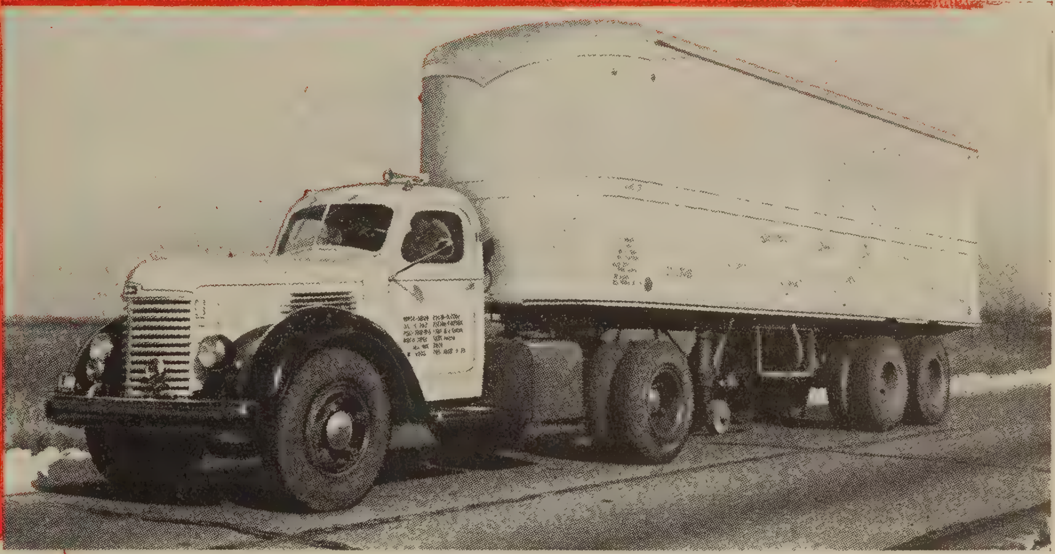
Cleveland

• • • **Sales rose** but profits dipped in the first quarter for Thompson Products, Inc., and subsidiaries, F. C. Crawford, president, reported. Net sales were $25,226,296 with net profit of $996,950, compared to sales of $23,532,185 and profit of $1,144,684 for the corresponding quarter of 1948.

Shipments to automotive manufacturers continued the upward trend experienced in 1948 and reached a new peak for any similar period, Mr. Crawford said. Sales of aircraft products exceeded the same period of 1948. Current shipments of automotive parts to car builders are continuing at a high level into the second quarter, although incoming orders for replacements are showing a tendency to fall off.



long on stamina



From ore dock to finished product, *quality control* watches over the entire process of making Wisconsin Steel. Here is steel of finest quality, carefully produced under the exacting standards of Wisconsin Steelmen.

The crankshaft of this International KB-10 truck is made of Wisconsin Steel—an important reason why this dependable truck delivers the goods. Wisconsin Steel—and International Trucks—are long on stamina.

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WISCONSIN STEEL

Washington . . .

EUGENE J. HARDY

• Moratorium legislation attacked . . . Senator Langer echoes arguments of f.o.b. mill theorists . . . Attack likely to spur passage.

WASHINGTON—An indication of the line of attack to be followed by opponents of moratorium legislation, which would permit good-faith and noncollusive freight absorption, can be gleaned from the minority report on S 1008. This measure would free business from the danger of prosecution for setting delivered prices until July 1, 1950.

The minority report is signed by Senator Langer, R., S. D., and is heavily loaded with the arguments advanced by the group within the Federal Trade Commission that feels that exclusive f.o.b. mill selling is the cure-all for the nation's economic maladies. The inspiration for the report is generally assumed to have come from this source. The Judiciary Committee reported S 1008 to the Senate by a vote of 7-2, however, it is apparent that Senator Langer was not able to induce the other dissenting legislator to sign his report, since the only signature is that of the gentleman from South Dakota.

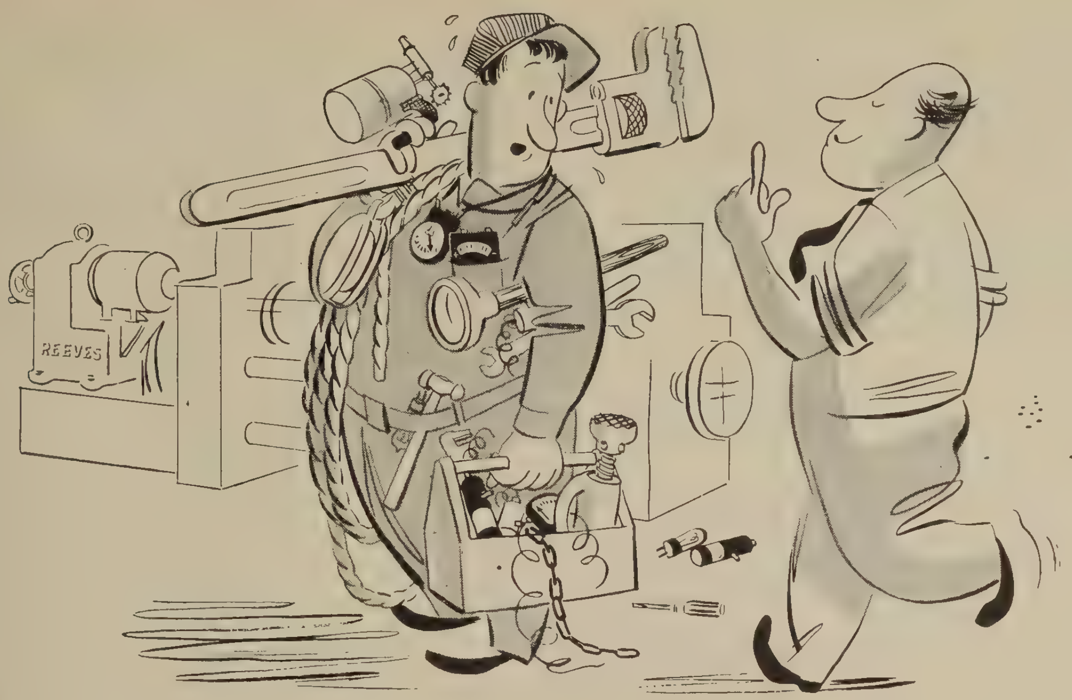
The more moderate group within FTC received a mild shock from the report's intemperate language and outright attack on freight absorption. It is this group that has been trying to sell the steel industry the idea that freight absorption is still legal, provided the buyer can choose between f.o.b. mill and delivered pricing. Simply stated, this group is against legislation because they feel that the controversy can be straightened out by the commission. The f.o.b. mill group is against legislation (period).

Actually, the report is likely to spur Congressional interest in the problem which has been in and out of the limelight on Capitol Hill since the cement decision was handed down last year. This is highly probable for two important reasons: (1) the minority report claims broader effects for the bill than anyone in industry or government expects it would have, and (2) it further claims that S 1008 would permit industry to adopt a whole host of pricing practices which no sane industrialist has even hinted at up to the present time.

FOR example, Senator Langer's report maintains that freight absorption as authorized by S 1008 will again legalize the basing point system. This conclusion is arrived at in the following manner: "Since each firm in an industry will be able to absorb freight from its own mill, all mills will be able to quote identical delivered prices at any delivery point by suitably varying the amounts of their respective freight absorptions. This can be done automatically if every mill establishes a mill price and regards the mill prices of all other mills as base prices governing the delivered prices in territory contiguous to those mills. The amount of any mill's freight absorption to any destination will then become whatever is required to equal the sum of the mill price at the governing mill plus the freight from that governing mill to the destination. The result will be a complete basing point system, with every mill a base and all delivered prices identical, by formula, at every delivery point. The participating mills can then defy the antitrust agencies to prove that this result is due to conspiracy, since the means by which it is achieved have been specifically sanctioned by law."

The report also claims that under the provisions of the moratorium bill a return to the long-discarded practice of charging so-called "phantom freight" is also inevitable, because neither S 1008 nor the present law imposes "any limit upon the height of a seller's factory price." The report was quick to point out, however, that it is neither "practicable nor desirable to impose any such limit."

SENATOR LANGER also declares that enforcement of the antitrust laws will be set back many years if the moratorium bill is passed by "replacing the test of effect with the test of purpose or intent." To illustrate, he points out that "price discriminations which injure competition are now forbidden by the Clayton Act unless the price differences can be justified by differences in cost. But under S 1008 a price discrimination through absorbing freight would be lawful no matter how seriously it might injure competition, provided its purpose was to engage in competition in good faith. Thus no violation of law could be proved unless the Government could prove that the hearts of the discriminators are not pure. Even the orders of the Federal Trade Commission terminating violations of the law by the conduit producers and by the United States Steel Corp. would be suspended insofar as they limit the right of these concerns to ab-



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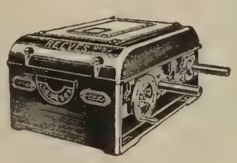
THE 3 BASIC REEVES UNITS



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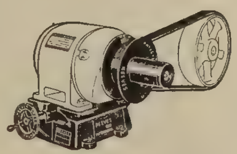

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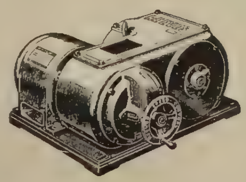

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Maintenance of machines equipped with REEVES Speed Control requires no special tools—no special training. REEVES units incorporate an operating principle proved in more than 260,000 installations. Simplicity of design and rugged construction throughout, with all working parts easily accessible, assure low-cost, trouble-free service. And on the job, REEVES Variable Speed Drives give you smooth, instant speed changes—provide *exactly* the right speed for every job under every changing condition. Result: increased production . . . improved, uniform quality . . . lower production costs. Install REEVES Speed Control on machines now in service—specify "REEVES-equipped" whenever you buy new machines.

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sorb freight, unless the Government could show that those who disregarded these orders acted with a bad purpose."

In a more general attack on the provisions of the bill, Senator Langer repeats the old Washington assumption that business and industry spends a majority of its time looking for ways to violate the law. Because the bill's ambiguous language will not be interpreted by the Supreme Court until several years after the moratorium expires, the report concludes that business, being aware of this fact, will be able to interpret the bill as they choose and thus to justify a variety of monopolistic practices that are now illegal. According to this line of reasoning, industry would go all out to run rough shod over the laws of the land and "when the Supreme Court decides against them the moratorium will have expired, and the Court's affirmation of a cease and desist order will provide no punishment or relief."

THE dissenting report also attacks the introduction of new terms and phrases into the antitrust laws, without providing any definitions or standards for their interpretation. Included are such phrases as: engaging in competition; absorb freight; in any and all markets; and delivered prices. While this argument may have some merit, it is not a new one, and it should not be forgotten that FTC's interpretation of a number of words and phrases in existing law is one of the primary factors which has brought about the current delivered pricing mess. In any case, Senator Langer's remedy, consisting of a group of amendments to S 1008, would add another 6 or 8 similar phrases to existing law.

With this bill backed by strong Democratic forces in both the Senate and House, it is perhaps significant that the only dissent from the Judiciary Committee's action came from a Republican, a Republican, however, who is noted for his eccentricities and who often bolts his party on controversial issues. The only other outspoken critic of this legislation on Capitol Hill has been Rep. Wright Patman, D., Tex., who has been conducting a one-man lobby in the pages of the Congressional Record. His daily diatribes have come almost exclusively from material used by the FTC in its prosecution of the cement industry. A vigorous opponent of lobbying which in any way favors business and industry, he is also currently engaged in a one-man lobby to get federal funds for the construction of a bunch of steel mills in his own state of Texas.

THE BULL OF THE WOODS BY J. R. WILLIAMS

WHY, HAMP, HOW GRAY AND HOLLOW YOU LOOK! GOIN' INTO BUSINESS IS A BIG STRAIN, I GUESS!
LOOK--THIS USED TO BE HUSKY HAMP WITH TH' BIG CHEST AND RUDDY FACE-- TH' WRENCH BENDER!
HAMP NEVER BENT ANYTHING AND NEVER CHANGED ANY! HE LEFT AND MADE A FORTUNE DURIN' TH' WAR, AND THEY'RE JUST SALVIN' THEMSELVES THAT IT'S KILLED HIM!
J.R.WILLIAMS 5-20
T. M. REG. U. S. PAT. OFF.
THE WRECK
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•

Industrial Building Lags With Publicly Financed Projects Up

Washington

• • • **Almost $1.4 billion** worth of new construction was put into place during April to bring the 1949 total to $5 billion, about 4 pct more than for the same 4 months last year.

Continued decline in dollar volume of industrial and commercial types of construction leaves the 4-month total at $715 million or 12 pct below last year. Industrial building has dropped to a rate of $90 million monthly with more attention to smaller projects.

Publicly financed construction has gained by leaps and bounds with dollar totals up 37 pct from a year ago. April volume was $381 million.

State and local expenditures for public housing are rising although these—$13 million in April—are relatively small compared to institutional building. April public expenditures for highways were $100 million and for schools, $70 million.

At the same time, Commerce Dept. reports that the production of construction materials is easing off with January-February output 11 pct under last year.

Among the 21 materials for which records are kept, nails, reinforcing bars, soil pipe, and warm air furnaces were still being produced in greater amounts than last year.

India Orders Engines

Washington

• • • **India has placed** orders for 863 new locomotives, of which 303 will come from the United States, 350 from Canada, 190 from the United Kingdom, and 20 from France, according to Foreign Commerce Weekly. As of Mar. 31, India had more than 1000 over-age locomotives in operation.

It pays to specify

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This Macwhyte ATLAS Special Choker sling is only one of many designs. Catalog on request.

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3. All ropes in ATLAS Slings follow a continuous spiral path throughout the entire body length.

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. . . greater reserve strength
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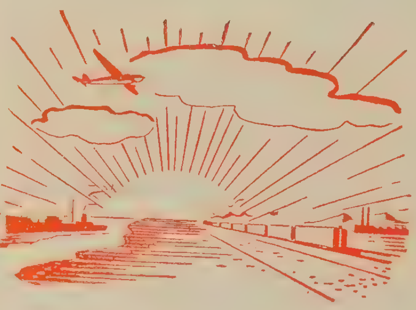
West Coast . . .

ROBERT T. REINHARDT

• Survey of western steelmakers reveals high ingot production with some reductions in work weeks but few layoffs in finishing departments . . . Labor giving some trouble.



SAN FRANCISCO — Effect of f.o.b. mill pricing and easing in demand for rolled steel products are manifesting themselves in spotty production cutbacks, labor layoffs and further price adjustments.

A survey of western steel producers indicates that the present transition period toward a normal market, or, as some phrase it, "recession," has reached the point where production and hence labor is being affected. Although actual layoffs have been numerically small, shorter work weeks in mills are not uncommon. There is some reason to believe that these reductions in take-home-pay are contributing to the restiveness of labor in both producing plants and metalworking shops.

No uniform pattern of production trends is clearly outlined from reports of western producers because while some are operating all furnaces at or near capacity, others admit curtailments.

Up in Seattle, Bethlehem Pacific Coast Steel Corp. is still operating at record levels and in April produced 21,491 net tons of ingots which contributed to the total record production of the three coast plants during that month. Officials there indicate that there is no immediate prospect of reduction in the rolling mill operations. However, spokesmen point out that orders are not coming in as rapidly as only a short time ago and the backlog is being cut into steadily by the high production rate and the slump in business. Present indications are that May production will equal that of April.

Rumors persist in this area that Bethlehem Pacific Coast Steel Corp. will soon purchase the structural steel division of Isaacson Iron Works but officials of neither company will verify nor flatly deny the deal. Such a move would leave Isaacson with its galvanizing, tractor equipment and forging shop and provide Bethlehem with a well equipped fabrication and tower division in Seattle.

Northwest Steel Rolling Mills of Seattle has been operating its rolling mills on a 4-day week for the past month, not because of a slump in business but rather because of a shortage of ingots which consistently plague this producer because of small furnace capacities. Officials here state that they have felt no slackening in demand and that the mills would go back on to a 5-day week if ingot supply could catch up. About July 4 this company will follow its usual custom of shutting down the rolling mill for 2 weeks for a vacation period but will keep the furnaces going to build up a backlog.

STEEL users and fabricators in this Seattle area are generally operating at capacity or near that high point. Isaacson Iron Works reports that its structural steel operations are at capacity; Puget Sound Sheet Metal Co. is putting on a second shift to keep up with the growing backlog and Pacific Car & Foundry Co. reports business as good. The hardest hit among the steel users are the smaller metalworking plants and orders for heavy machinery have dropped.

Labor at Bremerton Navy Yard is feeling economy moves and approximately 500 men will be laid off July 1 which begins the next fiscal year. At present the payroll numbers 9500.

Unemployment in the state of Washington has decreased 2814 for the week ending Apr. 30 as compared to the previous week and a total of 42,646 claims for unemployment insurance were filed during that week, which is still considerably higher than for the corresponding period last year.

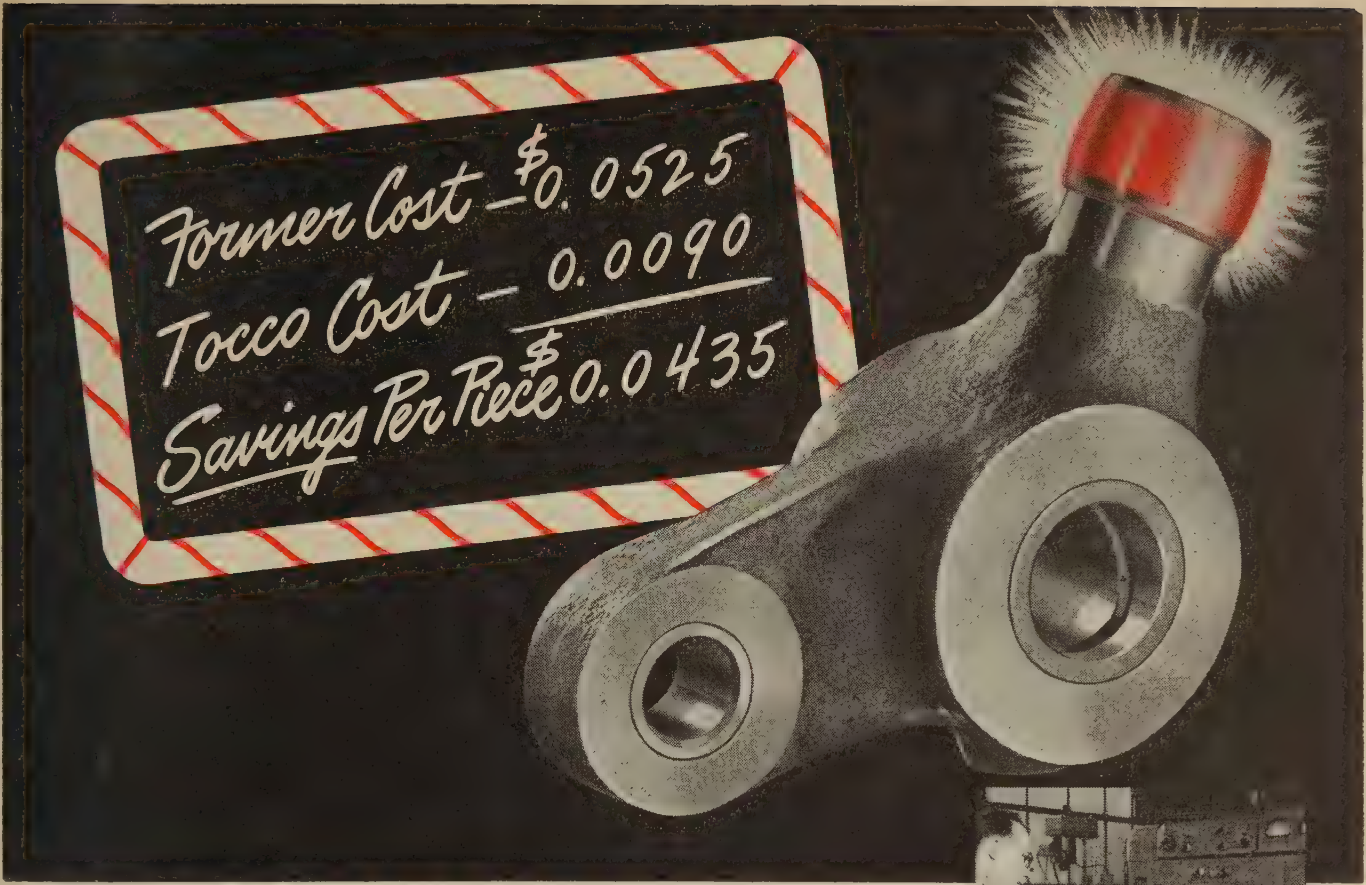
Oregon Steel Mills at Portland reports that two of its three electric furnaces are working on a 24-hr basis with the rolling mills working three turns a day on a 5-day week.

At Geneva, Utah, Geneva Steel Co. continues to operate both its openhearth and its rolling mills at capacity and a company spokesman said that he knew of no plans to reduce production nor cut personnel. A weakening demand is, however, admitted.

Reduction in warehouse steel prices averaging about $5.00 per ton and running up to $15.00 per ton on structural shapes and plates produced by Geneva have been announced at Salt Lake City by Morris Rosenblatt, president of Structural Steel & Forge Co.

These cuts, according to Mr. Rosenblatt, will bring local warehouse prices on these items to approximately the same level as they are in eastern industrial cities for the first time in history. In other words, consumers in this area who purchase in less than carload lots will begin to get the benefit of a local basic steel industry. These reductions are believed to have been brought about by increased supplies of steel being made available from eastern sources and because Geneva is making more structural shapes and plates available locally.

IN the nonferrous field, Kennecott Copper Corp. has announced a reduction of the work week from 48 to 40 hr at its plants in Nevada, Arizona and New Mexico. The Utah division is still on a 48-hr week and no change is contemplated for the immediate future, according to operating officials. Many of the small mines have cut back to the 40-hr week



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● Progressive engineers at Lima-Hamilton Corporation, Lima, Ohio have adopted TOCCO Induction Heating for hardening the Shifting Lever shown here.

600 *parts per hour from this 50 KW, 10,000 cycle TOCCO Induction Heating Machine!*

CUTS COST—TOCCO Induction Heating of this part saves over 4¢ per piece—$25 per hour—costs only 17% of former heating methods.

SPEEDS PRODUCTION—Automatic heating cycle is 4 seconds, quenching cycle 2 seconds, total production 600 TOCCO-hardened parts per hour.

VERSATILITY, TOO—This part is only one of *139 production parts TOCCO-hardened* by Lima-Hamilton Corporation. All 139 show substantial savings over conventional heating methods.

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to eliminate overtime wages while others have been reducing working forces.

Precipitous drops in nonferrous metal prices are beginning to affect mining operations in Utah. First reported shutdown arising from the price reductions was the Pacific Bridge Co.'s milling operation in the Park City district. For the past 3 years the company has been operating a 1000-ton daily capacity mill, recovering lead and zinc from the old mine tailing. S. W. Norton, manager, said price drops have reduced the gross income from the operation by 38 pct forcing an indefinite suspension.

Kennecott's Utah operations are again threatened by a resumption of last winter's 103-day strike which was never actually settled, but only recessed pending a report by a fact finding board. The board has reported and the company has rejected its recommendation that the mine railroad men be given a $2.71 per day increase. Currently the company is insisting on a job evaluation and the union is saying that it will settle for nothing less than the board's recommendations.

In the San Francisco bay area the two major producers were having trouble—one could prove of major importance and the other primarily a minor irritation.

Last Thursday approximately 4000 production employees of Columbia Steel Co. at Pittsburg, Calif., walked off their jobs in what is reported as an unauthorized strike and a violation of the existing labor contract between the company and United Steel Workers of America CIO. The trouble started because the company transferred one of the five third-helpers on each of the three turns in the openhearth department. Actually only three individuals were affected by these transfers but 4000 persons were idled by the walkout.

IMPROVEMENTS in openhearth practice including the use of atomized oil and gas have substantially increased the production of each of these 5 furnaces and studies were made by the company to determine the amount of work required by the various occupations. Under the labor agreement the company is called upon to review and possibly revise the methods of pay when changes are made in such equipment and it was this review which determined that one of the 5 helpers could well be eliminated.

According to O. L. Pringle, vice-president in charge of operations, these studies showed that each of the 4 remaining third-helpers would actually be required to perform considerably less work that could be considered reasonable as a fair day's work requirement. Further it was pointed out that the remaining 4 helpers on each shift would actually make more money than before. No grievance has been filed and officials of CIO Steel Workers Union, local 1440, report they had not authorized the walkout.

Until the strike, Columbia had been operating at near, or better than, capacity in its openhearth department with the exception of a slight curtailment 2 weeks ago when 2 furnaces were down for repairs. There has been a cutback on the wire and nail mills from a one turn, 5-day week to a one turn, 4-day week and a reduction in production in the merchant mill. Approximately 900 men were affected by the reduced work week at Pittsburg, but there have been no layoffs at this plant. Alden G. Roach, president, stated that f.o.b. mill pricing has been responsible for reduced sales of some of the company's products in what were normal marketing areas.

Judson Steel Co. at Emeryville, Calif., reports that normal operations are continuing with 2 of its 3 openhearths at least always in production and that its small bar mill is operating on two turns a day for 5 days a week.

Pacific State Steel Corp. at Niles, Calif., is going "full blast" according to company officials.

REPORTS published in daily papers in San Francisco to the effect that Bethlehem Pacific Coast Steel Corp. at South San Francisco had put 200 men on the unemployment list in the past 2 months caused a mild furore in labor circles. This statement was credited to Charles Robinson, secretary of CIO steelworkers Local 1069 of South San Francisco and has been flatly denied by Bethlehem officials. Actually, according to the company only 30 men have been laid off in the last 2 months and these were normal changes. It is pointed out that in peak periods during the war 1350 men were employed whereas today the payroll totals 1650. There have been reductions in the work week from 5 days to 4 days in the rolling mills which affects 300 men and the maintenance operations have likewise been cut to 4 days which affects 134 men. Otherwise operations continue on a high level and the South San Francisco openhearths contributed their full share of the record tonnage of ingots produced in April.

In southern California, Kaiser Co., Inc., continues to make news with announcements of cuts in plate and pipe prices and additional freight allowances.

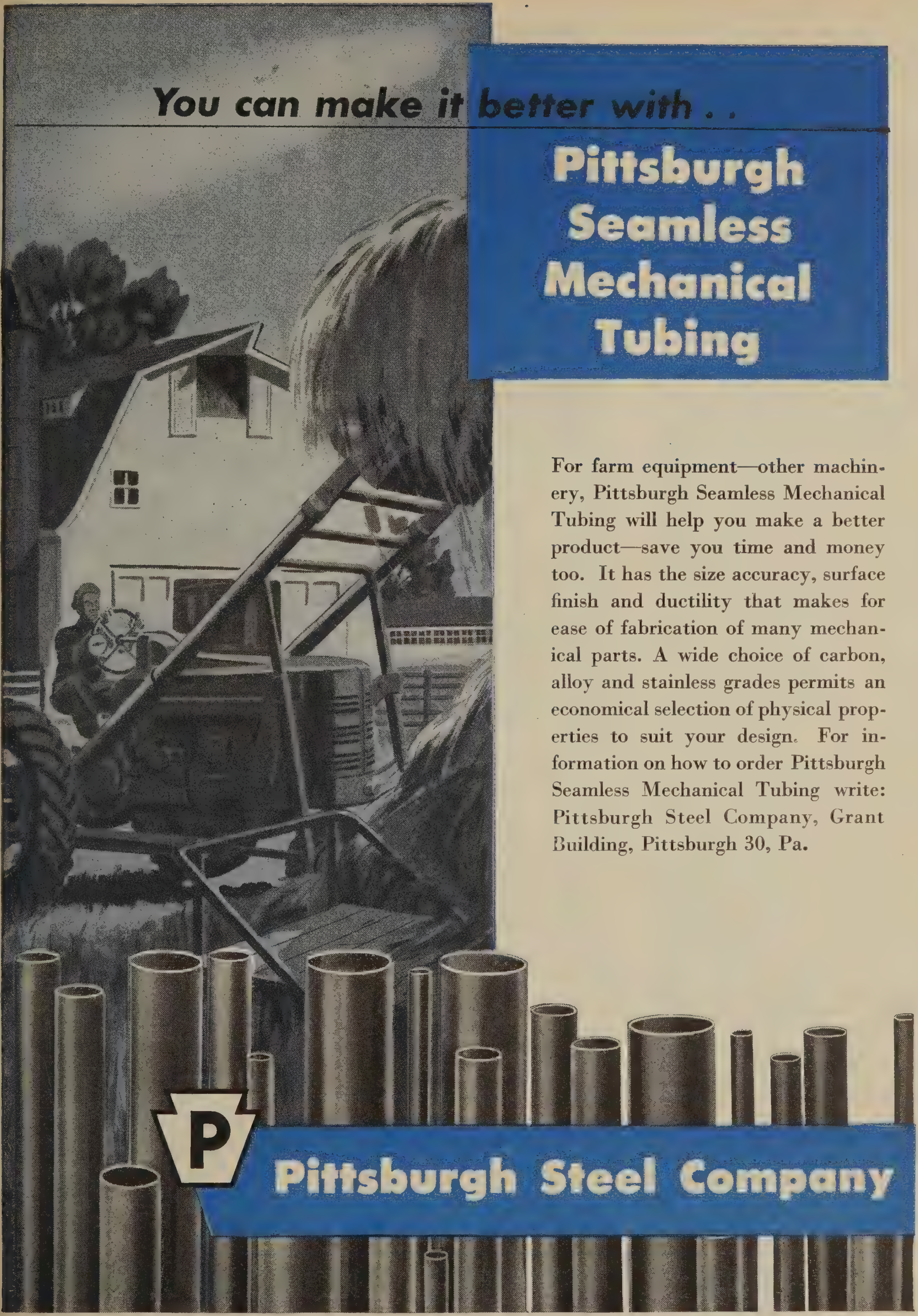
The f.o.b mill price for sheared plates is now $4.35 per 100 lb, down from the former price of $5.30. In addition to this slash the following are typical of freight allowances per 100 lb on plates from Fontana to destinations with the full freight rate quoted first: to Los Angeles, $0.0857, $0.0223 allowed; to San Diego, $0.203528, allowance $0.1616; to Bakersfield, $0.257, no allowance; to San Francisco $0.332, $0.28 allowance.

Kaiser base discounts f.o.b. Fontana on continuous welded, standard steel pipe have been announced as follows, with black listed first and galvanized second: ½-in., 32 and 14½; ¾-in., 35 and 18½; 1-in., 37½ and 21½; 1¼-in., 38 and 22; 1½-in., 38½ and 22½; 2-in., 39 and 23; 2½-in, to 3-in., 39½ and 23½; and 4-in., 33½ and 17.

Typical freight allowances being made on this pipe are: to Los Angeles, nothing; to San Diego, $0.1410; San Jose, $0.2034; and San Francisco, $0.2597. The Fretz-Moon pipe machine is working three turns a day.

In southern California, Bethlehem Pacific Coast Steel Corp. is working at capacity and the Torrance plant at Columbia Steel Co. has reduced operations on its 12-in. mill from 5 days to 4 days which affects only 80 men.

Southwest Steel Rolling Mills has just cut out one complete shift because of decreased sales of reinforcing bars, angles and fence posts. They are now employing 140 men as compared with 196 recently on the payroll.



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PERSONALS

○ ○ ○

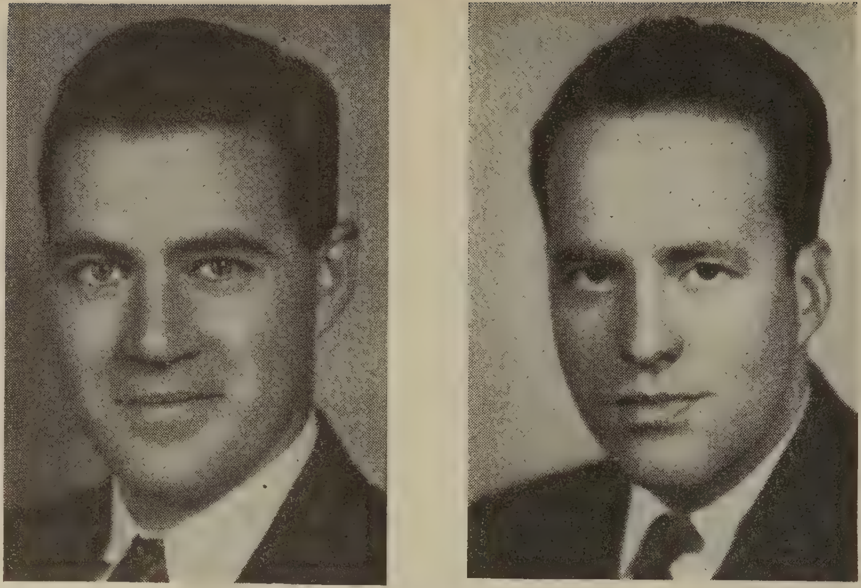
• **Clay P. Bedford** has been promoted from vice-president in charge of manufacturing to executive vice-president of Kaiser-Frazer Corp., directly responsible for operations at Willow Run, Mich. Mr. Bedford is also a director of the company. He started with Kaiser enterprises in 1925 as a draftsman.

• **E. H. Doering** has been named executive vice-president of Maumee Malleable Castings Co., Toledo. **N. P. Mahoney** has been promoted to plant manager. **R. E. Bossert** has been named sales manager. **H. M. Breese** has been named secretary. Mr. Doering joined the company in 1919 and has served as general manager of the company since 1945. Mr. Mahoney has been with the firm since 1920 and has served as purchasing agent, production manager and superintendent. Mr. Bossert has been with the company 17 years and has been in charge of the plant's pattern department. Mr. Breese, who joined the company in 1928, has been treasurer and purchasing agent, and continues his duties in these offices.

• **Tom C. Ingersoll** has been appointed general manager of the Pacific Coast district for Bethlehem Pacific Steel Corp., shipbuilding division, including the San Francisco, Alameda, Calif., and San Pedro, Calif., yards. Mr. Ingersoll continues to serve as manager of the San Francisco yard, a position he has held since 1944. He succeeds **W. M. Laughton**, who has retired as general manager of the Pacific Coast district, but continues to serve in a consulting capacity.

• **J. Frederic Land** has been appointed manager of sales, **Nelson B. Morrow**, office manager, **Leslie S. Bishop**, sales metallurgist, Alan Wood Steel Co., Conshohocken, Pa. **W. E. Bossert** has been transferred from the Philadelphia district sales to New York district sales and **John L. Hallman** from general sales to Philadelphia district sales.

• **J. D. Potter** has been named assistant treasurer of Columbia Steel Co. in Los Angeles.


DONALD C. SHELDON (left), assistant treasurer and KENNETH A. ANDERSON (right), assistant secretary, American Brake Shoe Co.

• **Donald C. Sheldon** has been elected assistant treasurer and **Kenneth A. Anderson** has been elected assistant secretary of the American Brake Shoe Co., New York. Mr. Sheldon has been with Brake Shoe since 1941, serving in the Treasury Dept. Mr. Anderson has been with the company since 1944, also serving in the company's Treasury Dept. **James R. Shepard** has been appointed western district works manager in Chicago and **Thomas J. Wood** has been appointed to the New York post of eastern district works manager of the Brake Shoe & Castings division of American Brake Shoe. Formerly eastern district works manager, Mr. Shepard started with the company in 1937. Mr. Wood, formerly superintendent of the division's Mahwah, N. J., plant, has served in various supervisory capacities since he joined the company in 1939.

• **Laurence C. Johnston** has been appointed district sales manager with headquarters in New York City for Brown Fintube Co., Elyria, Ohio. Prior to his appointment, Mr. Johnston had been eastern district manager of Process Engineering, Inc.

• **Dr. Arpad Nadai** has retired as consulting mechanical engineer for the Westinghouse Research Laboratories, Pittsburgh. Dr. Nadai is an internationally known specialist in the plastic flow of metals. He has been with Westinghouse since 1927.

• **Irvin W. Gray,** who had previously served as superintendent of the 98-in. cold mill, has been named assistant electrical superintendent, Cleveland district, for the 98-in. strip mill, Republic Steel Corp. Mr. Gray joined Republic in 1937. **Benjamin T. Beasley, Jr.,** who had previously been a Civil Service employee of the U. S. Navy, has been named assistant electrical superintendent for the steel plant, other than the 98-in. mill.

• **C. E. Hammond** has been appointed quality engineer of the Shippenburg, Pa., division of SKF Industries, Inc., Philadelphia. Mr. Hammond joined SKF in 1947 as a time study engineer. Previously he had been with Fairchild Engine & Aircraft Corp.

• **Jack F. Brossart,** formerly general sales manager of Industrial Filter & Pump Mfg. Co., Chicago, has been appointed Pacific Coast manager of the company. **Harold W. Faint,** who has been with the company since 1945, and recently served as manager of the Ion Exchange department, has been appointed general sales manager, succeeding Mr. Brossart.

• **Allan M. Douglass** has been named general manager of the KoolShade-Storm-Shade department of the Ingersoll Steel Div., Borg-Warner Corp., Chicago, with headquarters in that city. Mr. Douglass had formerly served as sales manager of the insulation division of National Gypsum Co.

• **Ervin A. Arnesen** has been elected vice-president of the Chicago Mfg. Co. division of Revere Copper & Brass, Inc., New York. Mr. Arnesen, who has been with the company more than 30 years, succeeded Thomas Flack as general manager of the Chicago Mfg. Co. in 1947, in which position Mr. Arnesen has served until his new appointment. Mr. Arnesen has his headquarters in Chicago.

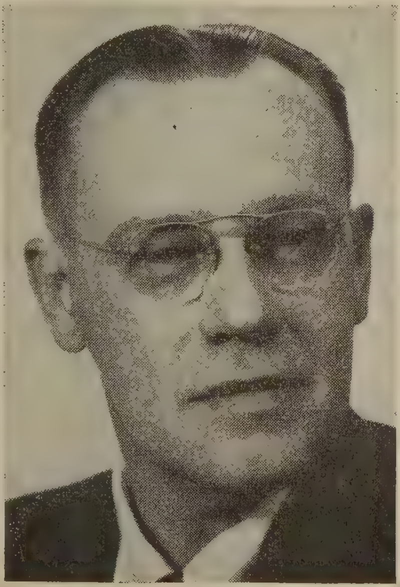
• **Paul Watts** has been appointed general sales manager of Skilsaw, Inc., in Chicago. Mr. Watts has been with Skilsaw for 9 years and has been Pacific Coast manager since 1947.

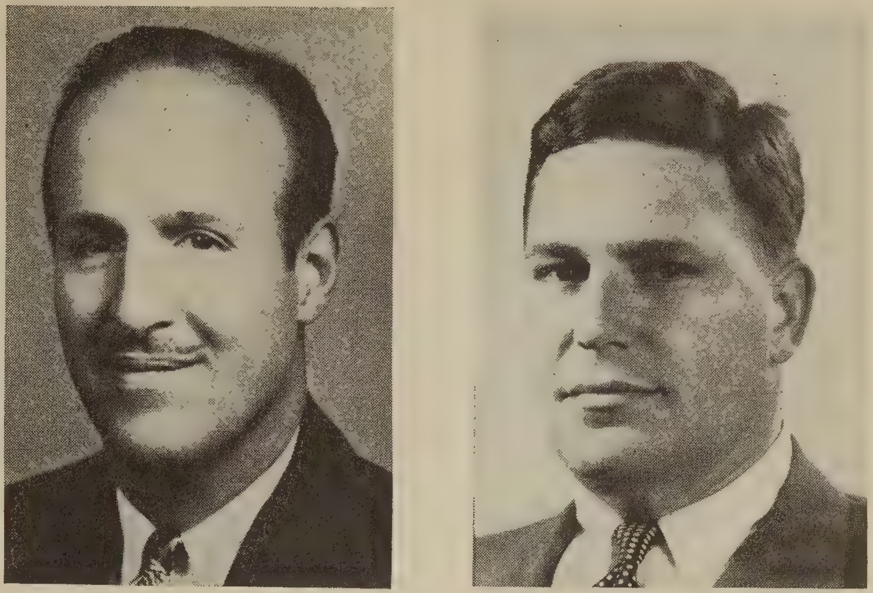
• **Charles B. Bednar** has been elected a vice-president of Van Dorn Iron Works, Cleveland. Mr. Bednar had formerly served as works manager. **Harry D. Garber** and **Lawrence C. Jones** have also been appointed vice-presidents of Van Dorn Iron Works.

• **David A. Stuart** has retired after 24 years of service in the sales department of Heppenstall Co., Pittsburgh.

• **Frederick C. Schwendler** has been appointed chief engineer, Stamping Div., Eaton Mfg. Co., Massillon, Ohio. For the past two years, Mr. Schwendler had been plant manager of Falcon Mfg. Co., a subsidiary of Bowman Products Co.

FREDERICK C. SCHWENDLER, chief engineer, Stamping Div., Eaton Mfg. Co.





DONALD L. PRICE (left), sales manager, Central Region, and WILLIAM A. RUSSELL (right), Detroit district manager, Norton Co.

• **Donald L. Price,** Detroit district manager of the abrasive division of the Norton Co., Worcester, has been appointed sales manager of the newly-created central region of the company. **William A. Russell,** abrasive engineer in Toledo, has been appointed to succeed Mr. Price in Detroit. Mr. Price joined Norton in 1922 and has been Detroit district manager since 1944. Mr. Russell started his Norton service as a sales trainee and has been an abrasive engineer in Toledo since 1946.

• **Robert S. Strawsburg** has been appointed resident field engineer in Europe for Warner & Swasey Co., Cleveland. Mr. Strawsburg has been with the company since 1941 and for the last three years has been in the East Orange, N. J., office. Mr. Strawsburg has his headquarters in Paris, France.

• **W. J. Ulrich** of the Pacific Machinery & Tool Steel Co., Portland, Ore., has been appointed Pacific northwest distributor for A. Milne & Co., New York.

• **Helen J. Zeise** has retired as purchasing agent, after 40 years of continuous service with the Columbus Bolt & Forging Co., Columbus, Ohio. Miss Zeise has been succeeded in that position by **Walter H. Canter,** who has been associated with the company for many years as cost accountant and later as controller.

• **Dr. Sidney Siegel,** who joined Westinghouse research laboratories staff in 1938, and who, for the past two years, has been on leave from Westinghouse serving as chief of the radiation effects section at the national laboratory research division at Oak Ridge, Tenn., has been appointed manager of physics research in the atomic power division at Westinghouse Electric Corp., Pittsburgh. Also returning to Westinghouse after two years at Oak Ridge is **Dr. W. A. Johnson,** where he headed the metallurgy division at the Tennessee atomic energy center. Dr. Johnson has been appointed to direct work of a similar nature for Westinghouse at Bettis Field. He joined the Westinghouse research laboratories in 1939. **M. A. Schultz** has been appointed manager of instrumentation and control research and **E. C. Barnes,** manager of industrial hygiene, both in the atomic power division. Mr. Schultz has been active in the fields of television and radar at Westinghouse and Mr. Barnes has served as an industrial hygiene engineer with the company since 1933.

• **Elmer C. Cook** has been appointed representative in northeastern Ohio, Michigan and western Pennsylvania for American Gas Furnace Co., Elizabeth, N. J. **J. E. von Maur** has been appointed to represent the company in part of Ohio and eastern Indiana.

MARVIN W. SMITH, president, Baldwin Locomotive Works

• **Marvin W. Smith,** who had formerly served as executive vice-president, has been appointed president and chief executive officer of the Baldwin Locomotive Works, Philadelphia. **Henry B. Bryans,** president of the Philadelphia Electric Co., and **Frederic A. Potts,** president of the Philadelphia National Bank, have been elected to the board of directors of Baldwin.

• **Hugh Wainwright** has been appointed sales engineer for the electronics division of Sylvania Electric Products Inc., New York. Mr. Wainwright joined the company in Boston in 1946. **Paul W. Erickson** has been appointed manufacturing superintendent for the division. He joined Sylvania in 1933 at Emporium, Pa. **John P. Vail** has been named distributor sales representative for the radio division of Sylvania, in Pennsylvania, Ohio, Michigan, West Virginia and Maryland. He began work for the company at Emporium.

• **Louis D. Cull,** treasurer, general manager, and chairman of the board, Cleveland Chain & Mfg. Co., Cleveland, has resigned and sold his interest in the company and its subsidiaries. He had been an executive officer in the subsidiaries, Bridgeport Chain & Mfg. Co., the Seattle Chain & Mfg. Co., and the Round California Chain Co.

• **Roland D. Anderson** has been appointed manager of the shipyard for the Dravo Corp., at Wilmington, Del. Mr. Anderson started with the corporation at Pittsburgh in 1928. He has served as plant superintendent at the Wilmington yard since 1946.

• **L. R. Kessler** has been appointed vice-president of Owens-Corning Fiberglas Corp., Toledo. Mr. Kessler has also been named general manager of the Pacific Coast division, with headquarters at Santa Clara, Calif. **Ben S. Wright** has been appointed vice-president of the corporation and general sales manager, with headquarters in the general offices in Toledo. **W. C. Winterhalter** has been named vice-president and sales manager of the Pacific Coast division located in Los Angeles.

• **Fred W. Gerow,** formerly with R. C. Mahon Co., Detroit, has become associated with Detroit Arsenal as automotive design engineer.

• **Paul B. Entrekin,** former vice-president and manager of Bethlehem Chile Iron Mines, has been appointed general manager of the mining division, Bethlehem Steel Co., Inc., Bethlehem. Mr. Entrekin has been with the company since 1925 when he started as an engineer in the mining department. He became manager and vice-president of the Bethlehem Chile Iron Mines Co. in 1944.

PAUL B. ENTRIKEN, general manager, Mining Div., Bethlehem Steel Co. Inc.

CLINTON E. BRAINE, assistant to the president, Crucible Steel Co. of America

• **Clinton E. Braine** has joined Crucible Steel Co. of America, New York, as assistant to the president. Before he retired from the navy, Admiral **Braine** served as assistant chief of naval materiel, for production, in Washington.

• **B. F. Gill,** who has served as Detroit district field manager, Associated Lines Sales division of the B. F. Goodrich Co., Akron, Ohio, has been transferred to Philadelphia in a similar capacity. **Ernest Hookway** has been named to succeed Mr. Gill in Detroit. For the last several years Mr. Hookway had served as operating manager of the company's plastic sales division.

• **W. A. MacDonald,** formerly vice-president, Kaiser-Frazer Corp., and **Fred R. Cooper,** former vice-president in charge of sales of that company, have joined Crosley Motors, Inc., and have acquired stock interests in the company.

• **James L. Erickson** has been named sales engineering representative for aluminum bronze and silicon bronze vacuum die castings, covering southern Ohio and southeastern Indiana for Aurora Metal Co., Aurora, Ill. **R. A. Egelhoff** and **E. M. Poling** have been named sales engineering representatives for the company in southern Illinois, Missouri, Kansas, southeastern Iowa and Evansville, Ind.

CLAYTON E. SCHOLES, general manager, Osco Steel Div., Ohio Stainless & Commercial Steel Co.

- **Clayton E. Scholes** has been named general manager of the new Osco Steel Div., in Detroit, Ohio Stainless & Commercial Steel Co., Cleveland. **Nate A. Wade** has been appointed assistant manager and **Owen W. Brock,** warehouse manager. Mr. Scholes has been with the company since 1945. Mr. Wade has been associated with the warehouse business in Detroit for the past 35 years. Mr. Brock had been with Edgar T. Ward's Sons Co. since 1932, serving in the Buffalo and Detroit branches.

- **F. B. Davis, Jr.** has been elected chairman of the board of National Distillers Chemical Corp.

- **Joseph P. Coughlin** has been appointed assistant manager of the specialty transformer sales division of the specialty transformer and ballast divisions of the General Electric Co., Schenectady. Mr. Coughlin has been with G.E. since 1941. **William R. Wright** and **Elmer K. Stieglitz** have been appointed district representatives, Mr. Wright in the Atlantic district and Mr. Stieglitz in the southeastern district, for the construction materials department of the company in Bridgeport, Conn. Mr. Wright has been with the company since 1933 and Mr. Stieglitz joined the G.E. Supply Corp. in 1930. **Alexander P. Leverty** has been assigned to the Atlantic district with headquarters in Richmond. Mr. Leverty has been with G.E. since 1924. **Joseph H. Shull** has been appointed supervisor of commercial scheduling and order service for the wiring device division of the construction materials department. Mr. Shull joined the company in 1927.

- **Charles E. Schley** has been elected chairman of the board of Philadelphia Bronze & Brass Corp., Philadelphia. **Donald Bryden,** associated with the corporation 22 years, has been elected president and director and **Gordon E. Keim** has been elected vice-president and director. **Dr. F. R. Hensel** and **Ray F. Sparrow,** vice-presidents of P. R. Mallory & Co., Inc., have been elected directors of Philadelphia Bronze & Brass.

BRUCE L. STETTER, general manager, Export Div., Reynolds Metals Co.

- **Bruce L. Stetter** has been named general manager, export division in the New York office of the Reynolds Metals Co., Louisville. Mr. Stetter had formerly been associated with Republic Steel Corp., Bethlehem Steel Export Corp. and the U. S. Bureau of Foreign and Domestic Commerce. **A. L. Lippitt** has been named products manager of Alnesium cases for the company. Mr. Lippitt had previously been connected with Mills Industries where he had been midwest regional manager.

(CONTINUED ON PAGE 181)

OBITUARY...

- **Walter A. Bolton,** president of R & B Rock Bit Co. and Syracuse representative of the Wyckoff Steel Co., Pittsburgh, died May 2.

- **Edward S. W. Farnum,** 86, retired general superintendent of the Midvale Co., Philadelphia, died May 5.

- **Samuel W. Mays,** 65, retired director of purchases, American Cyanamid Co., New York, died recently.

- **Lowell W. Chase,** 79, retired sheet metal contractor, died May 1, in Lynn, Mass.

- **Charles S. Sumner,** western representative, Riverside Metal Co., Riverside, N. J., died May 6.

- **Dr. Arthur B. Yates,** 48, formerly chief geologist of the International Nickel Co., stationed in South Africa, died in Montreal, Canada, on May 10.

- **Floyd F. Oplinger,** 51, manager of electroplating service and development in the electrochemicals department, E. I. du Pont de Nemours & Co., Wilmington, Del., died May 9.

- **Mark O. Ward,** manager of the Cincinnati district, replacement tire sales division, B. F. Goodrich Co., Akron, died in Cincinnati, April 22.

- **Lester H. Pillion,** 53, sales manager, Precision Castings Co., New York and Syracuse, died May 9.

- **Charles B. Slater,** superintendent of power and plumbing, Chase Brass & Copper Co., Waterbury, died May 7.

- **Frank B. Bell,** 72, founder and chairman of the board of Edgewater Steel Co., Pittsburgh, died May 6.

- **Emil C. Stolberg,** 74, retired chief engineer, American Car & Foundry Co., New York, died May 4.

- **Sidney L. Palmer,** 66, metallurgist, Federated Metals Div., American Smelting & Refining Co., New York, died May 9.

European Letter . . .

• Lifting of blockade only cold battle won by western powers . . . Russian retreat tactical move . . . Western victory in Berlin proves justification for stiff terms and strict adherence thereto.

LONDON—The Blockade of Berlin was lifted by the Soviet authorities at 00.01 hours on May 12, nearly a year after it was first imposed. There is no room for doubt that this is a spontaneous withdrawal and that the western powers have won the cold battle of Berlin. It is both a political and a technical victory. It has been won by inflexible firmness combined with great material achievement. The Americans and British in Berlin made their terms— no discussion of German problems with the Russians until the blackmail of the blockade was lifted—and they stubbornly kept to them. For this, the greatest share of the credit goes to General Clay, who was confident and determined even when other western heads were shaking. But firmness would not have been enough without the air lift. The operation has been a brilliant success, both from the practical point of view and as a builder of prestige for the west. In the period of the blockade, over 1,500,000 tons of food, coal and other supplies have been flown in to the beleaguered 2,500,000 inhabitants of western Berlin. The American air force has been responsible for over three quarters of this total, though it has been supported without stint by the RAF. The process has been smooth and apparently effortless, and it is certain that the Russians never believed it possible. The testing period of autumn and winter is over, and with spring Moscow acknowledges a defeat.

Nevertheless, this first clear victory in the cold war is being strangely misinterpreted in the western countries. The western sectors of Berlin are still, as they have always been, an anomaly. Last spring they represented weak outposts dangerously far removed from a strong base. That is what they still are, though the base is a bit stronger. Intrinsically, Berlin is no better a capital for Germany than Frankfurt, and the western Powers could have given it up without grave loss if it has not become the object of a vital trial of strength. The importance of the successful defense of Berlin does not lie in any prize that is to be found in that city, nor yet in any strengthening of the western strategic position in Germany; from that point of view the occupation of Berlin is still, as it always has been, a weakness. The importance of the victory lies in its effect in western Germany. The Bonn Constitution, with the promise that it holds out of real progress in the reconstruction of democratic life in Germany, would never have been adopted if the air lift had not given confidence to the orginally hesitant Germans that the balance of power lay with the west.

ANOTHER misconception is that the Russian retreat in Berlin is anything more than a tactical move. The cold war continues. There is not the slighest sign that the Kremlin is prepared to change its major strategy or abandon its ambitions in Europe. The tactics of the blockade went awry, because of both the air lift and of the counter-blockade, which has caused serious damage to the economy of the Soviet sphere; but Moscow's ultimate aims remain the same. It would be unwise to think that, because Mao Tse-tung is gaining an unexpectedly quick victory in China, a country that is incomparably less valuable to the Soviet Union than Germany, either economically or strategically, for offence or defense, the Moscow strategists are prepared to abandon Germany to the west. To them, despite western protestations, the Rhur will always be a potential arsenal and German manpower so many hundred potential divisions. It is only a cold battle that has been won; the cold war goes on as before.

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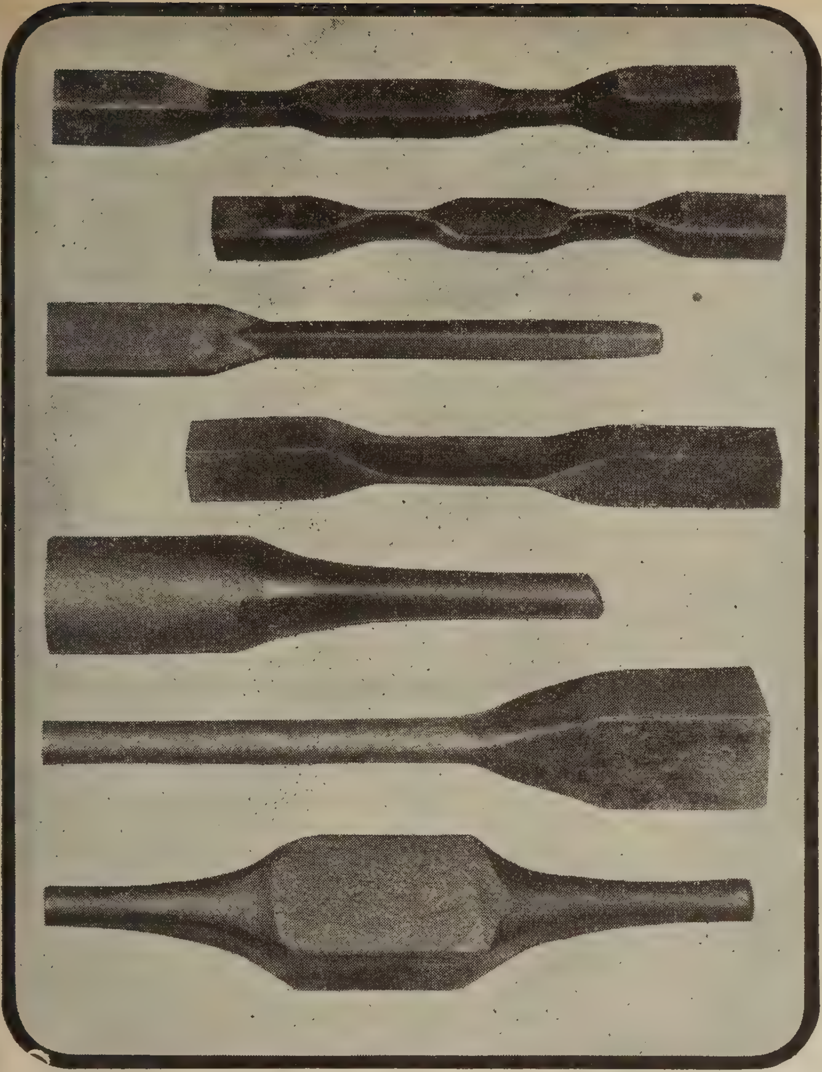
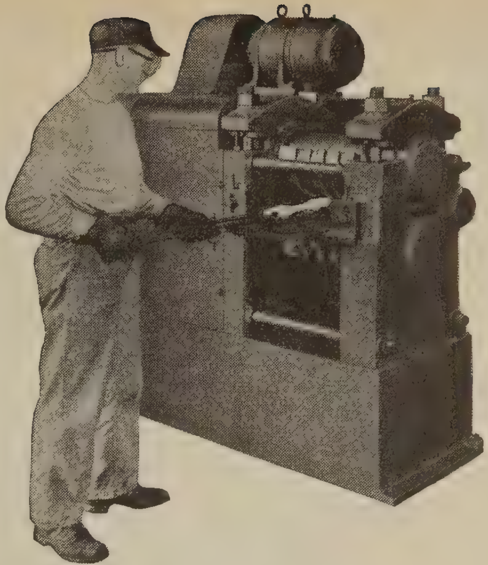
But perhaps the most peculiar misreading of the lifting of the blockade is to think that it creates a favorable opportunity for offering protestations of goodwill accompanied, of course, by concessions to the Russians. If the victory at Berlin proves anything it is that the way to deal with the Russians is to make stiff terms and to stick to them inflexibly. The western powers always said that they would meet the Russians to talk about the future of Germany if the blockade was called off, so that no weakness can be read into the summoning of the Council of Foreign Ministers as such. But an agreement to meet the Russians does not mean—and must not mean—a willingness to concede anything whatever to their demands in respect of Germany There is considerably less than no reason at all why the western powers should now be willing to accept any of the Russian policies that they rejected last time the Council of Foreign Ministers met On the contrary, their firmness is now justified up to the hilt.

It would be pleasant to be quite sure that this is clearly understood in Washington, in London and above all in Paris. Perhaps it is; the semiofficial reflections of the prevailing mood in the State Department and the Foreign Office are uncompromising enough. And yet it is difficult not to feel a little nervous. For at long last the Soviet leaders have made a clever move. A glance back over the last two years shows very clearly what havoc they could have caused in the western ranks if they had tried to lull and appease public opinion in the United States — indeed, throughout the





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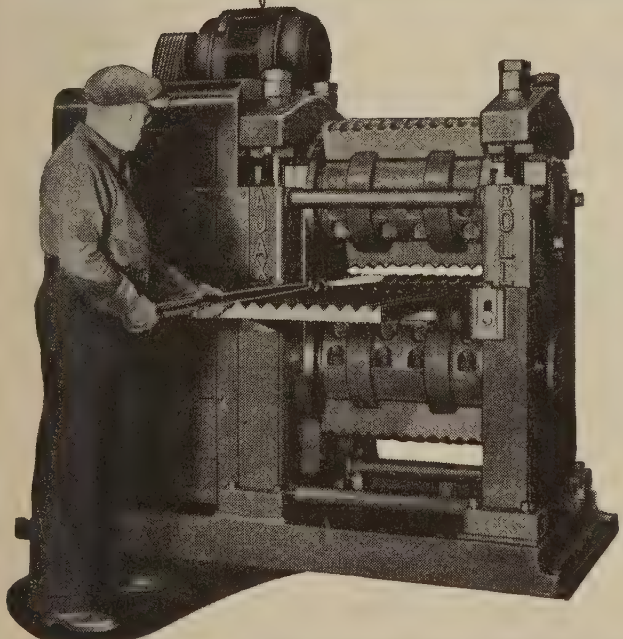

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west—instead of frightening it. Last year, they speeded the passing of ERP through Congress by the Czech coup and the French strikes; this year they are bringing the western powers to a conference on a general settlement of Germany while Congress is still debating the need for the Atlantic Pact and over $4 billion for a second year of ERP. There is a grave risk that the atmosphere in Paris may be one of Muscovite peace and goodwill. Already Mr. Stalin's famous smile is beaming as it did when President Roosevelt and Mr. Churchill accorded him half Europe at Yalta. Already, too, President Truman has declared that the Russians are acting in good faith, and Mr. Bevin has stated in Berlin that he looks forward to the conference as a step towards a general settlement that may lead to two hundred years of peace. Past occasions when British Foreign Secretaries have evoked the Golden Age have been so regularly followed by first-class diplomatic defeats that it is natural to feel a little apprehensive.

APART from the statements from President Truman and Mr. Bevin, misgiving is aroused by the effort that has been made to prove that the western powers, in their preliminary discussions, are not ganging up on Russia. Why should the west not gang up? Mr. Vishinsky should be warned in advance that it is no use his attempting to carry on Mr. Molotov's dividing tactics. That he will make every effort to deal with the Americans direct may be assumed, since Stalin's message to President Truman in the New Year, and the exchanges in the last few months at Lake Success, have given clear evidence that it is Russian policy to freeze out the United States' allies. To counter such attempts, the leaders of the free world should gang up as firmly and precisely as possible.

The crux of the whole question of relations with Russia lies in Germany; to that all else is, and will remain, subsidiary. The briefest survey of the state of affairs in Germany as it stood a few weeks ago and as it stands today is enough to show both why the Kremlin abandoned the blockade and what doubts that action has already cast upon western policy. The situation in the west of Germany a month ago was clear-cut and progressive. A western German democratic constitution and government were in process of formation, though ineptitudes on both the German and Allied side were making the process dangerously slow. The Bonn politicians of the Right, though they had dallied with emissaries from the Soviet zone, had rejected the invitation for joint talks on an all-German constitution extended by the Communist-dominated People's Congress in the East. The Ruhr Statute had established the rules for western control over the Ruhr, with provision for German participation. The Occupation Statute was finally agreed, safeguarding the political liberties of the Germans, and bringing western Germany into the Organization for European Economic Cooperation as a full member. The Council of Europe was about to be formed, providing for the future participation of Germany. The Atlantic Pact was signed though not yet ratified by Congress. Vague reports must have reached Moscow regarding the possible future inclusion of Germany in the Pact; and in the meantime the American base in that country appeared likely to be further extended. With the new currency and a flow of imports under ERP and relief grants, western Germany was making astonishing economic progress. The drift of factories and skilled personnel from Berlin and the eastern zone added to the glaring contrast in well-being with the Soviet East, which had not failed to impress the German workers. In short, it was clear that Russia must move soon if the battle of Germany was not to be lost altogether.

The Kremlin obviously hopes to regain at the council table some of the ground that has been lost in the past year. The probability is that the golden prospects of German unity and of the mutual withdrawal of the occupying armies will be dangled before the world. The aim is to force the western powers at least to hesitate by offering them immediately what they have repeatedly declared to be the eventual aims of their policy. Meanwhile these promises will be used as propaganda to draw away the hopes of the Germans from the west to the east. Both unity and evacuation, of course, are traps, for the western Germans as well as for the occupying powers. The western powers mean by unity a unified democratic Germany, that is, the absorption of the eastern zone within the structure now being built up at Bonn. The attractive power of conditions in the western zones is so strong that this must eventually come about. But to accept Soviet-style unity now would not be a step towards this goal but away from it, since it would mean *carte blanche* for Soviet interference and Communist infiltration in the three western zones, without any effective counter in the Soviet zone. Evacuation is a smiliar trick. A mutual withdrawal of occupying forces today would mean surrendering Germany to the Soviet-trained armed police of the eastern zone, that it, to a Communist police-state, with the Red Army itself just over the frontier, but the Americans back across the ocean. Evacuation will not be safe until there is a German Government capable of maintaining the rule of law in the whole of Germany, and until Europe is so settled that it no longer needs the assurance that the presence of American troops on the continent provides.

THESE arguments are, of course, well known, and it may seem unnecessary to restate them. But it would be wise not to underestimate the pressure that will be put on the western negotiators at Paris. There will be the not inconsiderable pressure of the world-wide Communist peace offensive, with its

Quips and cranks, and wanton wiles,
Nods, and becks, and wreathed smiles,

which have already taken in a great many people in the west who should know better. There will be the pressure of the Germans, who so long to have their country back to themselves that they will be sorely tempted to snatch blindly at whatever seems to promise it most quickly. And there will be some pressure from public opinion in the western democracies themselves, who yearn for settled peace and who, like all democracies, find it difficult to preserve their constancy from being eaten away by wishful enthusiasm for every appearance of a short cut.

The western Ministers should therefore enter the conference determined not to be forced on to the defensive, plaintively explaining why they oppose for the present what everybody desires eventually. There is only one sure way to accomplish this and that is to keep the initiative.

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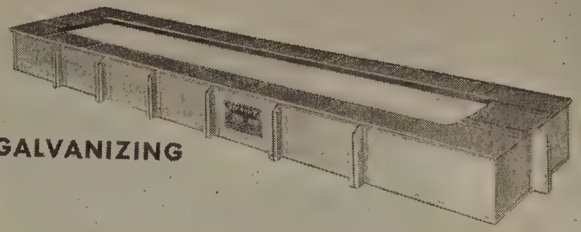

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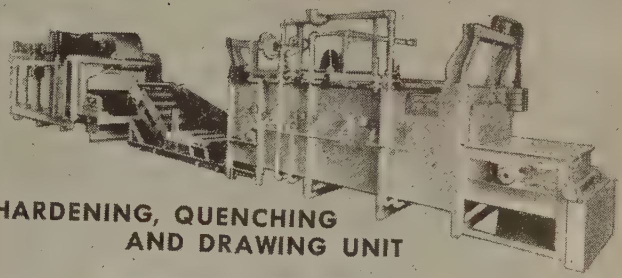

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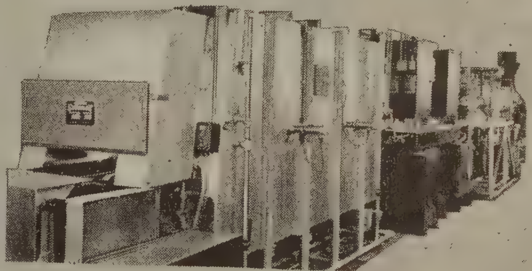

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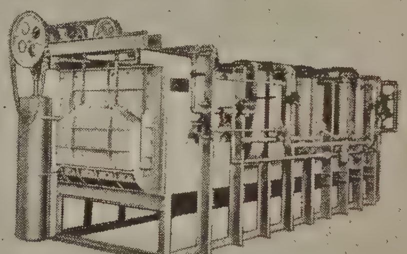

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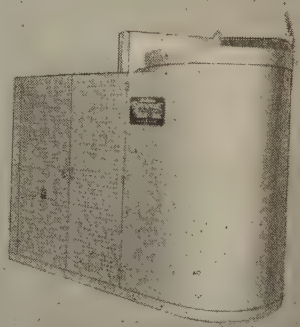

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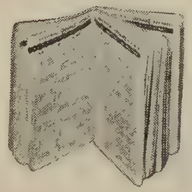

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• **STEEL LABOR**—Some 835 companies have just received letters from the United Steelworkers notifying them that the union desires "to negotiate for a general and uniform change in rates of pay, and for life, accident, health, medical and hospital insurance benefits," and "pensions upon retirement or disability." If no agreement is reached by July 16, a union spokesman said, the companies have the right to lock-out and the union the right to strike. Some 706,000 workers are covered in these contracts. Separate letters will go out on an additional 1200 contracts covering 319,000 employees.

• **STAINLESS DISCOUNTS**—Action over a 2-week period by Republic, Armco, Crucible and Carnegie-Illinois restores the jobber discount on stainless steels to its former level. These companies have also discontinued the practice of "basketing," whereby distributors—and in the case of Carnegie, both distributors and fabricators—were allowed to combine different sizes to calculate quantity discounts. Distributor discounts now are generally 10 pct except for plates, 7½ pct, and cold-rolled strip, 5 pct.

• **INVENTORY CONSCIOUS**—Industry and business continue wary of accumulating high-priced inventories and are buying cautiously. Office of Business Economics reports March totals up $50 million for a total of $54.5 billion. But when seasonally adjusted, they were down slightly in book value. Manufacturers' inventories were down $400 million to a $31.7 billion total.

• **LOOK AGAIN**—Aluminum shortages, previously estimated by the government at up to as much as 600 million lb in 1949, now sound fantastic. In addition to an easing of demand, Alcoa plans to bring in new production in Texas and Permanente plans to activate the Newark war surplus rod and bar plant.

• **ENTERS FRAY**—Federal Mediation and Conciliation Service has entered the Ford labor dispute. Cyrus S. Ching, national director, has instructed Arthur C. Viat, regional director at Detroit, to try and settle the issue. Previously Henry Ford II had warned that "clouding of the issues involved by union politics" would make mediation difficult in the present impasse.

• **OUTPUT DOWN**—Electric steelmaking operations have dropped to 72 pct of installed capacity for April from a high of 99.6 pct for February.

• **END OF CONSIGNMENTS**—Pipe distributors who must now pay for pipe as they buy it are becoming more careful about ordering. End of consignment selling by pipe producers makes jobbers more conscious of the dangers of overstocking and hence more particular about inventory control. Nor are they as prone to cut prices of pipe valves and fittings—all of which are now off the consignment basis. They realize that any price cut today cuts the price of their entire stock.

• **BUSINESS OFF**—Republic Steel Corp.'s plant at Buffalo is operating at less than 100 pct capacity for the first time since the early days of the war. Two openhearth furnaces were removed from service, leaving six in operation. Company reported action was taken to reduce inventories of semifinished steel. "Steel business has dropped off considerably in recent weeks and there have been quite a few cancellations of steel orders."

• **SLOW EXPORT RISE**—With total first quarter exports amounting to $3.27 billion, U. S. shipments to foreign markets were about $50 million above last year. In March, metals and manufactures rose from $90 million to $109 million; machinery and vehicles from $281 million to $332 million. First quarter imports showed a drop of $20 million to a total of $1756 million.

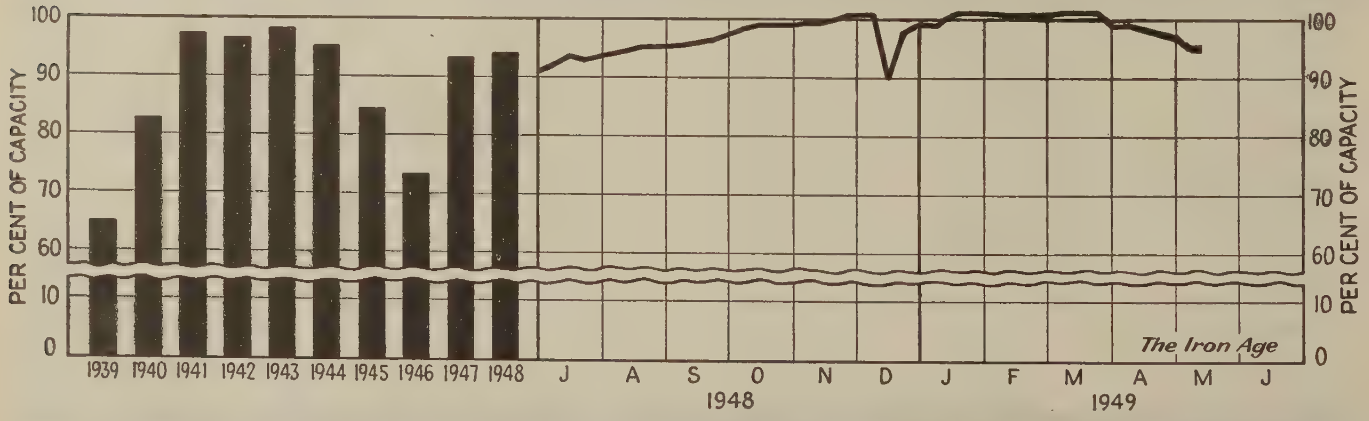
• **SLOWER PACE**—Lukens Steel reports the slower pace at which orders have been coming in has brought about a reduction of approximately 250 people in the working force. This is less than 5 pct of total employees. The company reports cancellations and postponements are making inroads in backlogs.

• **MORE TOOLS**—Marshall Plan orders for American-made industrial machinery and equipment may be expected to increase by at least a quarter billion in the coming 12 months under current programming. Tool purchase authorizations will be increased from the first year's $30 million to $45-$50 million.

• **CUTS PRICES**—Kaiser Co., Inc. announced cuts in plate and pipe prices with additional freight allowances. The f.o.b. mill price for sheared plates is now $4.35 per 100 lb. The former price was $5.30.

• **PENALTY**—The penalty on ferromanganese has been raised from $2 to $2.15 for each 1 pct below 78 pct.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
May 10........	97.5*	100.0	92.0	98.0	104.0	101.0*	98.5	103.0	75.0	102.5	93.0	75.5	64.0	96.0
May 17........	96.5	100.0	93.0	95.0	102.0	98.5	94.0	103.0	75.0	98.0	86.0	75.5	82.0	95.5

* Revised.

Industrial News Summary

- ***Customers Don't Like F.O.B.***
- ***Steel Rate Dropping Slowly***
- ***Last Quarter To Tell Story***

WITH the ingot rate slowly on the downgrade and order volume contracting a little, the effect of F.O.B. selling of steel will stand out in stark relief soon. Areas which easily operated at a high rate may find that they are rolling along at a rate under the national average and several points lower than those steel producers in dense consuming areas.

Whether or not such a situation will speed clarification of the legal right of steel firms to absorb freight—in a practical manner—remains to be seen. But steel users don't like F.O.B. selling of steel and are vocal about it. But not vocal enough to speed Congress or the Supreme Court on the matter.

A special survey by THE IRON AGE taken among metalworking plants which consume about a third of total steel shipments showed that 87.2 favored the old basing point method of selling steel. Only 12.8 pct favored F.O.B. without freight absorption.

There was little or no difference of opinion between large and small plants. Nor was there much difference between various geographical locations. The vote was strong and pointed—steel users as a whole do not like the present method of selling steel. Just how much pressure their likes and dislikes will have in months to come remains to be seen.

The easiness in steel supply will mean that many customers will be able to get most of their steel supplies around their own backyards. The danger from the present F.O.B. method of selling faces steel producers who are in areas which consume far less than is produced. But until steel leaders are certain that it is legal to absorb freight there is little chance of wholesale freight absorption in meeting competition. Some smaller steel firms may, and probably will, absorb freight but the larger ones have no intention of doing so as long as the legal aspects remain snarled.

INCOMING steel business is not as bright as a lot of steel people would like to see it. But so far no real worries have been shown publicly. Underneath there is a current of unrest among steel sales people. Customers are still paring down inventories. This week it looks orderly and bears no semblance to the sharp and painful process of mid-1937. But that is poor consolation to those who see cancellations increasing, orders harder to get and general slackening in the business of steel customers.

Inventories are still large among some firms, normal in others and small in still other groups. That presents the picture on a tonnage basis. But as and if end-use business fails to pick up or goes off further, the size of the inventories rises overnight. While the cases are still considered isolated, many large steel users are attempting to sell in the open market fairly large bundles of steel they don't need. They are not having an easy time finding buyers.

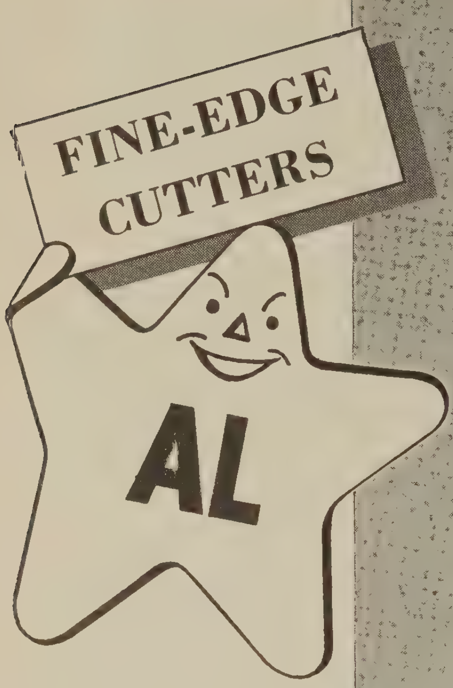
There is still no real evidence that the steel operating rate will dip sharply before the middle of July. But even as people keep remarking that the rate is not slated to go off, it keeps going down slowly. Already it has dropped 7 pct from the peak reached early this year. This week the steel ingot rate is off one half a point to 95.5 pct of capacity. Eyes in steel are no longer on the current steel rate. They are on the probable outcome of labor negotiations and the outlook for steel business the last half of this year.

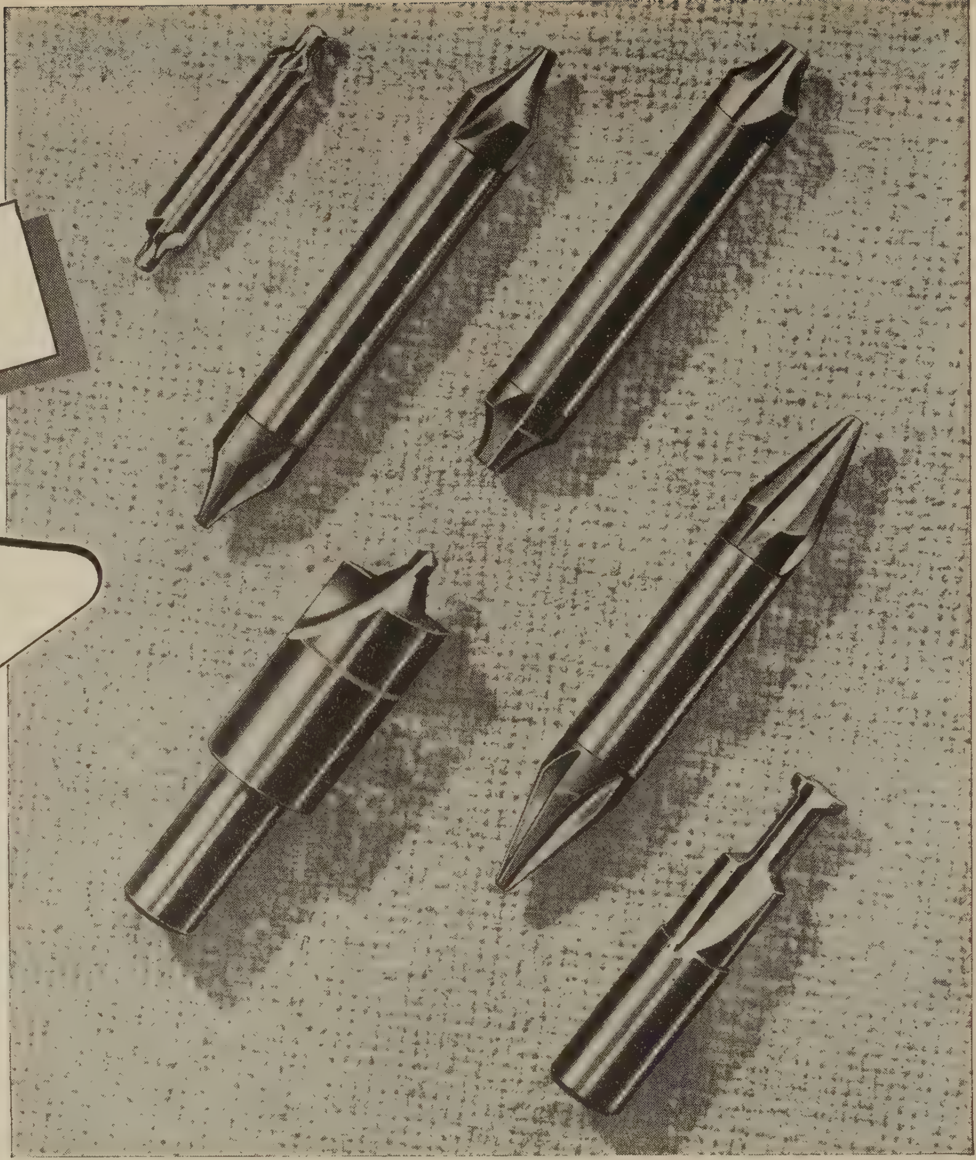
UNLESS there is a decided change in metalworking business conditions the outlook for fall steel bookings is not good. All major steel consumers, except export and the automobile industry, are and have been trimming their sails. Part of the retrenchment has been to reduce inventories but that has not been the whole story.

In April, demand for bolts, nuts and rivets was off substantially. Warehouse business is slowing up. Forgers are not pleased with their volume of new orders. Railroads are reneging on some of their orders placed previously because they don't need the steel. Pressing and forming plants are looking hard for new business. The oil industry is more or less placid about its future steel requirements.

Even in export, where there is a flurry of interest, there is not enough business to absorb the combined interest of major steel plants and brokers. The latter sprung up when steel was tight and hard to get. Now Western Europe's steel output is on the upgrade just at the time when the steel picture here is getting softer. So there will not be enough export orders for all.

The steel scrap market tends to support the view that there is nothing to suggest the reappearance of the top level steel production records at any time in the near future. Scrap markets are dullest in months. No changes in heavy melting steel prices occurred this week at major centers.





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Boom Merged Into Competitive Market for Fastener Makers

Nut, Bolt, Screw and Rivet Makers Face Price Tests And Smaller Backlogs

* * *

By BILL LLOYD
Cleveland Regional Editor

* * *

Cleveland

• • • **For nut, bolt,** screw and rivet manufacturers, historically among the first to feel the pangs of a business readjustment or recession, the postwar boom has merged into a highly competitive market, reviving such prewar problems as dwindling backlogs, lower shipments, spotty orders and price testing.

The present decline, in an industry which normally cuts up about 2½ pct of finished steel production, began in February and became a well-defined trend during March, April and May. In the past month, business has been bad, according to some producers.

While the industry awaits a third-quarter upturn, the nut, bolt, screw and rivet market shapes up something like this:

Customers are liquidating inventory.

Backlogs are down to 2 months. as compared with the corresponding period of 1948 when they averaged 8 months.

Steel, as far as the independents are concerned, is no longer a problem.

Price stability on the standard lines has been good to date, according to producers, but there has been some price cutting on the specials, and machine screws, stove bolts and cap screws are being severely tested.

Demand from shipbuilding, household appliance, jobbing, fabricating and agricultural implement industry is substantially off.

First quarter shipments of nuts, bolts, screws and rivets were off 9½ pct and orders off 19 pct from the corresponding quarter of 1948. Reliable sources in the trade expect the second quarter will not be as good as the first.

Cancellations are averaging between 10 pct and 15 pct, but more frequently, customers are simply withholding orders or requesting deferred deliveries.

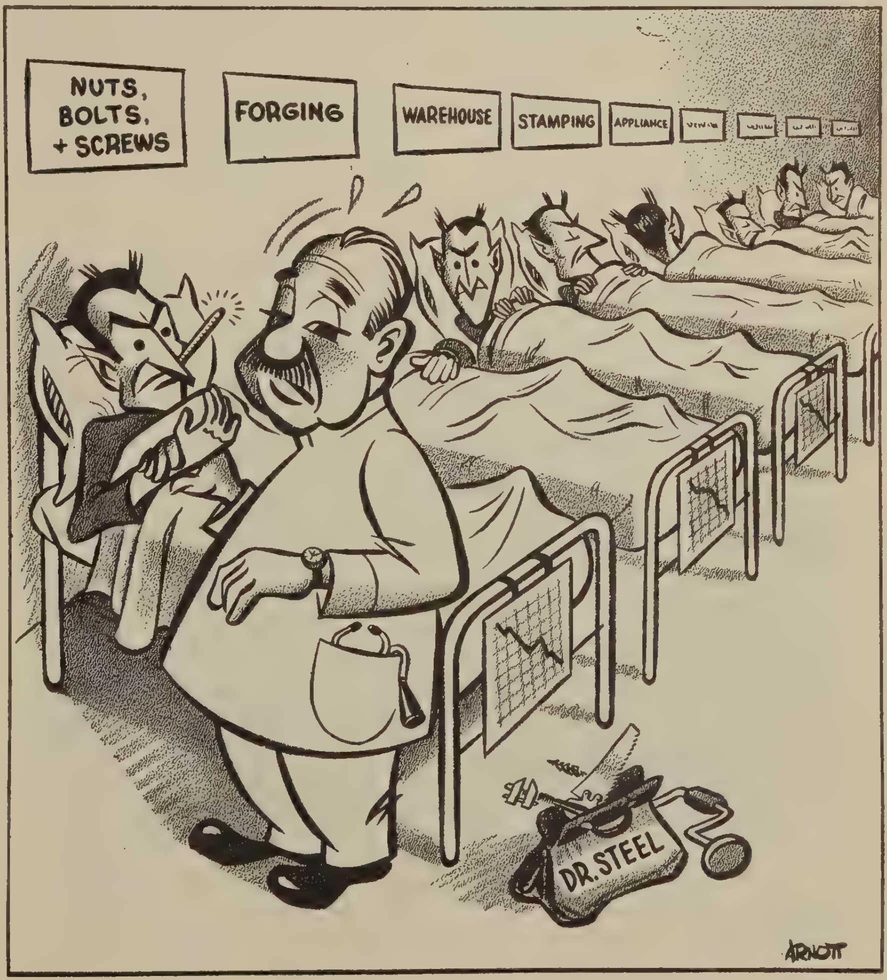
Bright spot is the automotive industry, which does not buy far ahead as a rule, and the fact that railroads, whose present inventories are variously estimated at 60 days to 6 months, will have to come back into the market some time.

Background of the present liquidation of inventory by nut, bolt, screw and rivet users goes back to the wild and wooly days of 1946-1947, when duplication of orders was common practice and the expected cancellations failed to develop. During this period, worry over the water in the order books in the nut and bolt industry almost reached phobia levels.

In the general shortage of steel and other needs, manufacturers thus built up big stocks, primarily because the cost of being caught short is tremendous and disproportionate to inventory cost.

Even in 1948 the industry could have produced, sold and shipped more than it did at any time, had more steel been available, or putting it another way, as late as last year steel was the only limiting factor.

On the other hand, the present situation is not without certain helpful aspects. In 1948 the fasteners industry, which includes nuts, bolts, screws, rivets and other headed and threaded products, shipped 1,000,000 tons valued



"Inventoryitis?"

at $350 million, according to best available estimates. In 1947 the industry's shipments were 1,000,050 tons valued at $325 million. Dept. of Commerce figures not presently available for 1948 are at variance with the 1947 totals. This is due to the inclusion of washers and the output of producers whose nut, bolt, screw, rivet or fastener production is not a regular or normal part of their business.

According to the Dept. of Commerce, manufacturers in the bolts, nuts, washers and rivets industry shipped products valued at $463.8 million during 1947, representing an increase of 305 pct over the $114.6 million value reported by the industry in 1939. Value added by manufacture in the industry during 1947 amounted to $282.1 million, an increase of 341 pct over the $64 million value added in 1939. Value added by manufacture is calculated by subcontracting cost of materials, supplies, containers, etc., from the value of products.

Average number of production and related workers in the industry amounted to 40,908 in 1947, compared with 20,722 in 1939. The industry's expenditures for new plant and equipment in 1947 totaled $18.3 million.

Producers for the first time in almost 10 years are being forced to examine costs. Steel and labor make up 70 pct to 80 pct of the average producers' costs, which means a rather stable floor and a narrow profit margin. At present the price of steel is stable, but if steel wages go up, nut and bolt producers at least usually follow. Thus, producers are trying to get more production per man hour to meet a possible outbreak of price cutting.

But some producers detect what they consider to be a remarkable stability of price, despite the fact that orders and shipments are substantially down.

Most producers feel that no business is to be gained in a declining market by cutting prices. They say price cuts don't make orders, because buyers will hold off to the bitter end, waiting for another drop before ordering.

At the present reckoning, the industry is on a plateau about 20 pct to 25 pct lower than 1948. Some sources estimate the nut and bolt business alone will be off at least 20 pct from last year, in both tons and dollars, depending to some extent on what the industry produces. If production runs to small stuff, the tons will be down and the dollars up. Big stuff will mean tons up and dollars down.

Certain segments of the industry feel that the present drop in business is temporary, but admit that buyers are ordering carefully, as indicated by the fact that the number of orders at many plants has increased but the volume is down.

Other producers felt, as far back as January, that the nut and bolt industry would do well to reach within 15 pct of 1948 volume, and now point to the fact that shipments are presently curtailed and if order backlog is out within 60 days, shipments will be very decidedly curtailed.

Some producers anticipate a break in the price of steel, despite the denials of steel sales representatives.

Over the entire situation hangs the fact that inventories won't last as long as people think and the pickup in the nut and bolt business will come as soon as people realize that inventories are too low, regardless of price.

MADE TO FIT: *Installation of 760 tons of pre-designed Bethlehem Steel trackwork, now underway on Pier 50 extension, San Francisco, represents the largest individual pier track job ever to be put in place on the West Coast. The addition includes 14 acres of loading facilities and pier sheds with which it will be able to handle more ship cargoes at the same time.*

Gets $10 Million Contract For New Power Plant

Montreal

• • • **The Foundation Co.** of Canada Ltd., has been awarded a contract on a cost-plus-fee basis, totaling about $10 million for the main construction work of the Manitoba Government's new power plant at Pine Falls on the Winnipeg River. J. S. McDiarmid, Manitoba's Resources Minister, signed the contract. Bird Construction Co. of Winnipeg will work with the Foundation Co., in carrying out the undertaking.

Government officials estimate the total cost of the Pine Falls power project, including construction and equipment, will be approximately $20 million. Work is to be started immediately.

Expands to Diversify Line

Welland, Ont.

• • • **Thermoid Mould** & Tool Works is adding 3750 sq ft to its plant here. Installing machinery to produce a complete line of precision metal-working dies, jigs and fixtures for die casting, blanking, stamping and drawing operations. This is in addition to the present line of precision plastic and rubber molds, Lloyd J. Falkenhagen, managing director, announced.

Pig Iron Prices Eyed by Purchasing Agents Who Look for an Adjustment

Chicago

• • • **Considerable talk** continues in the trade about lower pig iron prices. Having watched the sharp drop in scrap and nonferrous metal prices, purchasing agents are now eyeing pig iron. The foundries, who have experienced the feast to famine cycle in their business, are expecting iron to next go through the wringer, one reason being that it is closely tied to scrap.

Judging from price comparisons and supply and demand, pig iron is overdue. The pig iron price has not dropped from the high established last year, except in the south. Foundries aren't taking all the iron offered them and the furnaces are stockpiling. Very few steel companies, it is believed, will stockpile iron very long at the present prices. Disregarding strike possibilities, then, it appears logical to the foundry trade in this area that the price should come down.

One painful lesson has been learned by the iron sellers. Last year when insufficient pig iron was available, the pig iron suppliers helped the foundries develop melting techniques which employed a lean iron charge and an abundant amount of scrap. This helpful edification has backfired. With present scrap prices so low, the foundries have continued on the lean pig iron diet, much to the dismay of the iron sellers.

Pig iron makers claim there is no justification for a lower price based on their present operating costs. They point to the fact that their costs of coal, ore, limestone and the freight therewith, haven't gone down and until they do, a cut in the iron price of any appreciable amount is not in the cards. They further point to the drastic drop in the price of nonferrous metals and remind the industry, and themselves, that lower lead, zinc and copper prices haven't brought forth enough new orders to help matters.

American buyers, it appears, do things en masse. They all buy at once or stay out of the market at the same time. They have recently done this on scrap and nonferrous metals, and they are doing it to an ever increasing extent in pig iron. This buying habit may soon be repeated in steel products. When it is, even more iron will be available for sale on the outside.

The large price declines recorded in scrap and nonferrous metals have proved that price as such momentarily loses its relation to all other factors. Not until the price has reached rock bottom or the buyers come back into the market does price regain its normal relationship to supply and demand. Market men here point to the scrap industry as a case in point. Scrap has now gone through the cycle and is once again on the threshold where price may regain its proper status.

Nonferrous metals generally are in the same classification at the moment except that it appears that the bottom of the market has not yet been reached. Observers here are of the opinion that the pig iron price and pig iron as such is about to experience the same deflation as that recorded in scrap and nonferrous metals. Any important decline in operating rate or any major strikes within the industry, it is believed, will have violent reactions on pig iron. Regardless of what happens, however, the indications are the price of pig iron is precarious.

GM Sales Cars, Trucks Up for First Quarter

Detroit

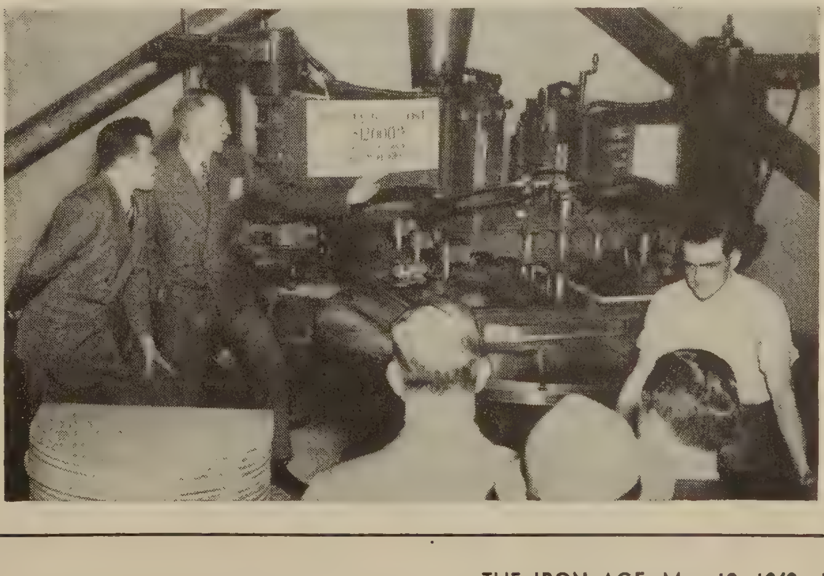
• • • **Net income** of $136,763,338 has been reported by General Motors Corp. for the first quarter of 1949. The net sales total of GM aggregated $1,282,324,474. Net income was 10.7 pct of sales compared with 9.4 pct of sales for 1948.

Based on dollar volume GM sales in the first quarter were three times the 1936-1941 prewar average.

Sales of GM cars and trucks during the period was 560,543 units as against 536,848 units for the corresponding quarter a year ago. The report also says that sales of automotive replacement parts and non-automotive products including Diesel locomotives, Diesel engines and Frigidaires continued at a high rate.

The report showed that an average of 396,261 employees were on General Motors pay rolls in the first quarter of 1949, compared with 388,911 in the first quarter of 1948.

THE WHYS OF PROFIT: *T. R. Jones, president of ATF, Inc., points out a sign on a table profiling machine in the Daystrom furniture plant at Olean, N. Y., to E. S. Suda, president of the Daystrom Independent Industrial Union. The sign says: "This machine cost $12,000. Profits buy tools, tools make jobs." The sign shows the necessity for profits, and to promote appreciation of the tremendous amount of capital needed to run a factory, provide jobs—and make profits.*



Industrial Briefs . . .

• Golden Jubilee — Republic Steel Corp., Youngstown, now the third largest steel producer in the nation, has recently observed its fiftieth birthday.

• AFS Honors—Honorary life membership in the American Foundrymen's Society has been confered upon Dean Clement J. Freund of the College of Engineering, University of Detroit. The award is in recognition for participation over many years in the industrial and apprenticeship training work of the society.

• No. 2 Man—Dr. J. C. Warner, Dean of Graduate Studies and head of the Chemistry Dept. at Carnegie Institute of Technology, Pittsburgh, has been elected vice-president and a member of the board of directors of the Electrochemical Society.

• South of The Border—Schultz & Martinez, S. de R.L., Calle Sullivan 119, Mexico D.F., has just been appointed sales representatives in Mexico for Kieley & Mueller, Inc., North Bergen, N. J., manufacturer of industrial control equipment.

• New Management—Sale of the Stanworth Mfg. Co., Lebanon, Ind., makers of high speed cutting tools, has been announced. New owners are Fred G. Phillips and Walter Susemichel, both of Engineering Metal Products Corp., Indianapolis, and J. Edward Marston of the same city.

• Larger Quarters—Stainless Steel Sales Corp., Philadelphia distributers of stainless steel sheets, strip, plates, bars, wire and tubing, has announced the removal of their offices and warehouse to larger quarters at 500 N. 12th St.

• Dryer Agents — Pittsburgh Lectrodryer Corp., manufacturer of dehumidification equipment, has appointed Kerr Machinery Co., E. Fort & Beaubien Sts., Detroit, and G. Baillie Houliston, 707 Race St., Cincinnati, as exclusive sales agents.

• Gala Opening—The Hyster Co., Portland, Ore., will officially open its new Los Angeles area retail truck sales and service facilities at 5301 Pacific Blvd., Huntington Park, Calif., on May 20, with an open house. A staff of 14 people will be headed by L. W. Barclay.

• New Home—Allied Products Corp., Detroit, will soon move its Victor-Peninsular Div., where its special cold-forged parts and high-carbon hexagon head cap screws are manufactured, into a new plant at 12677 Burt Road, Detroit.

• Entertained—Over 5000 industrial leaders attended the recent 3-day open house in the new headquarters of the Republic Supply Co. of California in the central manufacturing district of Los Angeles.

• Group Leaders—Arthur J. Fausek, president of Modern Engineering Co., St. Louis, was elected president of the International Acetylene Assn. C. E. Monlux, vice-president, the Linde Air Products Co., New York, was named vice-president; E. V. David, assistant manager of the Technical Sales Div., Air Reduction Sales Co., New York, was reelected treasurer and H. F. Reinhard was reelected secretary.

• Adds Shop—L. O. Koven & Brother, Inc., Jersey City, manufacturers of boilers, tanks, special process equipment and weldments, has announced the addition of a metal spraying shop which is equipped with the latest all purpose Metco metal spraying equipment.

• Brazilian Firm—Mineracao Cearnse, S.A., a company in which majority control is held by a United States corporation, has been formed to mine beryllium ore in the State of Ceara, Brazil, for export to the United States.

Impressive Ceremony Marks Dedication Of Memorial Laboratory

Hoboken, N. J.

• • • The new Peirce Memorial Laboratory of Metallurgy at Stevens Institute of Techology was dedicated last week in an impressive ceremony attended by representatives of metallurgical industries, technical societies, alumni and college officials.

The laboratory was established under a trust created by the late William H. Peirce, Stevens '84, supplemented by contributions from the Stevens Alumni Assn. It is part of the new Stevens Science Center which also includes the Morton Memorial Laboratory of Chemistry and the Kidde Memorial Laboratory of Physics.

Mrs. William H. Peirce of Baltimore, widow of the distinguished metallurgist for whom the new laboratory was named, unveiled a portrait of Mr. Peirce.

In the evening a public lecture on "The Metallurgical Economics of the Manufacture and Uses of Steel" was given by Harry W. McQuaid, Stevens '13, steel consultant of Cleveland. According to Mr. McQuaid, the steel industry would just as soon forget about the basing point system. With today's high prices of raw materials, openhearth steelmaking costs cannot be cut very much. Mr. McQuaid also added that some steel producers had more than enough scrap from home operations and would not be required to make any open market purchases.

Sells Plastic Business

Pittsfield, Mass.

• • • The sale of General Electric Co.'s cold molded plastics business to Garfield Mfg. Co., Garfield, N. J., was recently announced by the GE chemical department as a final phase in the closing of the department's Meriden, Conn., plastics plant. The transaction includes inventories, formulations, engineering specifications and some equipment.

GE is discontinuing production of cold molded plastics in order to give more emphasis to the growth of the company's thermosetting and thermoplastic molded and laminated lines, the announcement said.

Page-Hersey to Have New $5 Million Pipe Mill Operating Soon

Toronto

• • • **Page-Hersey Tubes Ltd.,** will have a new steel pipe mill in operation at Welland before the end of this year. The new mill with its existing auxiliary equipment will represent an expenditure of approximately $5 million and will produce pipe not formerly made in Canada.

The new plant will produce electric resistance welded pipe and eventually will employ about 400 men. It will use a cold expansion process, not previously used in Canada, which increases the diameter of cold pipe slightly and makes it considerably stronger.

Decision to proceed with the erection of the mill was accelerated as a result of Canada's enlarging needs for oil industry supplies and an order for 457 miles of 16-in. pipe for Imperial Oil Co.'s projected Edmonton to Regina pipe line. The Imperial Oil order will keep the new plant at full capacity for 6 to 7 months.

Arthur MacFadyen, vice-president of Page-Hersey Tubes stated: "The new mill will enable us to participate to a larger degree in the pipe requirements of the oil and gas industries. The cost of capital equipment is very high at present, but demands for the special pipe for oil and gas exploration, development and transmission in Canada are of paramount consideration and must be met at the earliest possible date."

The building to house the new equipment is 95 pct finished and foundations for machines 30 pct complete.

Describes New Engine

Muskegon, Mich.

• • • **Clarence J. Reese,** president of Continental Motors Corp., recently described the tooling and launching of the air cooled engine for vehicles before the Detroit Chapter, American Society of Tool Engineers.

Mr. Reese outlined in detail the 5 years' research and development which led to the development of a series of new air cooled engines for the U. S. Army in which standardization of parts is the design keynote. Reese has directed Continental since 1939. The company is one of the largest independent engine manufacturers in the country today with plants in Detroit, Milwaukee and Muskegon.

Zinc Price Reduction Reflected in Lower Quotations for Pipe

New York

• • • **Reflecting reduction** in price of zinc, U. S. Steel Export Co., U. S. Steel subsidiary, announces the following new prices with freight included to New York, Philadelphia or Baltimore.

These prices will apply on carload lots and are effective with shipments made from the mills on and after 12:01 a. m. May 11, 1949. Prices are subject to seller's current list of extras and deductions and conditions of sale. All sales are subject to seller's prices in effect at time of shipment.

American Standard Pipe, T & C	
Buttweld, 2½" and 3" Galvanized	25.6%
Seamless, 3½" to 6" Galvanized	18.1%
English Gas Tubes, T & C	
Buttweld, 2½" and 3" Galvanized	27.5%

Sees No Prospects Of '49 Labor Force To Reach '48 Peak

Washington

• • • **While the spring** upturn in employment has begun and job openings will increase substantially through the summer, government agencies see no prospects for the 1949 labor force to reach the peak 61.6 million (including armed services) of 1948.

Census figures on Apr. 1 placed civilian employment then at 57,800,000 of which 7,800,000 were engaged in agricultural jobs.

At the same time, the unemployed were estimated at 3,000,000 of which about 2,000,000 were drawing compensation. During the last week of April, the total jobless declined more than 150,000 and there was a drop of 20,000 in new initial claims for compensation.

Trading was down during the first quarter, the government employment service found, and the spring spurt in construction has failed to develop although employment there is growing. Sluggishness in metals and metalworking inventories was also blamed.

Aircraft employment, the agency said, is generally on the increase, though slowly, because of government orders.

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PERFORMANCE TEST: *One of the big blowers that will cool the atomic pile being constructed at Brookhaven National Laboratory, Upton, N. Y., is shown undergoing performance tests at the plant of the Sturtevant Div. of Westinghouse Corp.*

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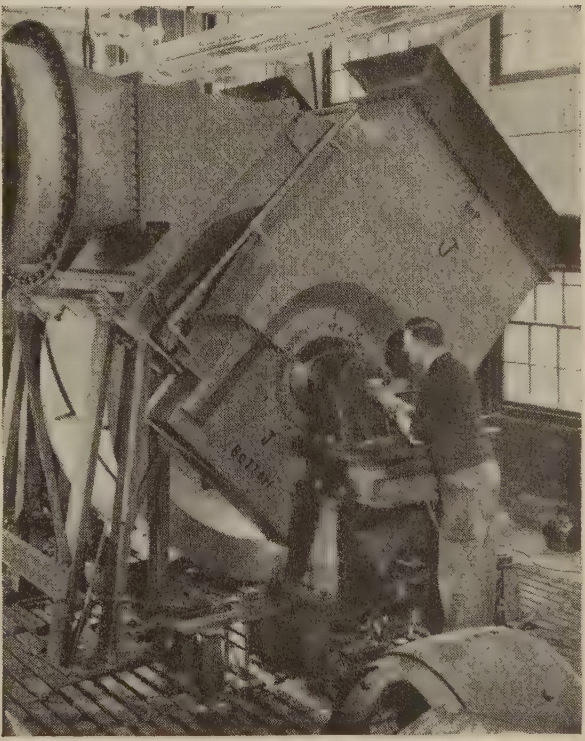


Canadian Company Places $9 Million Order for New Pipe Line and Equipment

Toronto

• • • **Imperial Oil Co.** representatives announced that orders exceeding $9 million for steel plate, its fabrication into pipe and for other equipment have been placed with Canadian companies. The material is for the Interprovincial Pipe Line Co.'s projected pipe line between Edmonton and Regina.

This pipe line is the first step in making Western Canada oil available over a much greater area. Western Canada oil production already has reached a level where additional markets must be found and output is expanding rapidly as new wells are brought into production.

Approximately 67,000 tons of special steel plate have been ordered from the Steel Co. of Canada Ltd., Hamilton. This is said to be the largest single plate order ever received by the Steel Co.

Page-Hersey Tubes Ltd., Welland, will fabricate the plate into 457 miles of pipe 16 in. diam. The pipe will be made in three thicknesses—114 miles of 5/16-in. thickness, for use near pumping stations, and 342 miles of 9/32 in., while river crossings will require ½-in. pipe. The pipe will be produced in Page-Hersey's new pipe mill which is to be completed later this year.

Also equipment has been ordered for two pumping stations, which will permit movement of 50,000 to 60,000 bbl of oil daily. In addition Imperial Oil has made provision for six more pumping stations. Pumps for the stations have been ordered from Railway & Power Engineering Corp. Ltd., Three Rivers, while engines and speed increasers were ordered from Dominion Engineering Co., Ltd., and will be made at Lachine.

The Steel Co. of Canada plate order will take approximately 10 pct of the company's annual ingot production and will take a full year to complete. When in full production Steel Co. will ship 200 carloads of steel each month from its Hamilton works to Page-Hersey at Welland.

Two-Thirds Nation's Industrial Output Found in 10 States

Washington

• • • **Legislators arguing** the pros and cons of basing points and freight absorption would do well to study the preliminary report of the Census Bureau's recent Census of Manufactures.

Two-thirds of the nation's industrial production is to be found within 10 states. These same states contain but half the total population—or consumers—of the country.

The 10 states are, in order of manufacturing importance, New York, Pennsylvania, Illinois, Ohio, Michigan, New Jersey, California, Massachusetts, Indiana, and Wisconsin. Moreover, there has been no change in the pattern since before the war.

Specifically, the census enumerated 240,801 industrial plants of which 153,957 were located in the 10 states. They employed 9.6 million or 67 pct of all industrial workers and 7.9 million or 66 pct of all production workers.

During the 8-year period (1939-1948) since the last census, there was a net increase of 57,000 in the number of manufacturing plants. Greatest increase was found in California which moved from 8th to 7th place and in Wisconsin which nosed out Connecticut for a place among the ranking ten.

In California, the number of plants rose from 11,558 to 17,654 while employment doubled to a total of 530,000. The value of manufactured products rose more than 250 pct to a 1948 total of nearly $4 billion.

New York, however, remains the greatest manufacturing state with 47,701 manufacturing establishments, pay rolls totaling 1,426,000 production workers, and manufactured products valued at $10 billion.

By industry, machinery (including electrical) production showed the greatest percentage increase in value added by manufacture during the 8-year span. Employment increased by 140 pct to a 1948 total of 2,347,000; establishments grew to 21,880; and, the value of their products to $11.7 billion or 300 pct.

Greater than average increases were noted in the primary and fabricated metals industries. In the primary field, the number of establishments rose from 3512 in 1939 to 5363 by 1948 while employment increased from 673,000 to 1,157,000.

Increases were greater in the fabrication plants where plants increased from 9532 to 16,729 while total workers grew from 451,000 to 971,000.

Coming Events

May 18-20	**National Steam Specialty Club,** annual meeting, Skytop, Pa.
May 19-21	**Society for Experimental Stress Analysis,** spring meeting, Detroit.
May 23-24	**American Steel Warehouse Assn.,** annual meeting, Atlantic City, N. J.
May 23-25	**American Gas Assn.,** production and chemical conference, New York.
May 25-27	**Gas Appliance Manufacturers Assn.,** annual meeting, Chicago.
May 25-27	**Machinery Dealers National Assn.,** annual meeting, Virginia Beach, Va.
May 30-June 1	**Metal Treating Institute,** spring meeting, Quebec.
June 2- 4	**Electric Metal Makers Guild,** annual meeting, Chicago.
June 5-10	**Society of Automotive Engineers,** summer meeting, French Lick, Ind.
June 12-16	**Materials Handling Exposition,** Chicago.
June 16-17	**Malleable Founders Society,** annual meeting, Hot Springs, Va.
June 27-30	**American Electroplaters Society,** annual meeting, Milwaukee.
June 27-July 1	**American Society for Testing Materials,** annual meeting, Atlantic City, N. J.
July 11-16	**Concrete Reinforcing Steel Institute,** annual meeting, White Sulphur Springs, W. Va.

Navy Plans Reduction Shipyard Employees During Coming Year

Washington

• • • **The Navy Dept.** has announced that employment in the 11 Naval shipyards in the United States and Hawaii will be reduced by approximately 10,000 persons in the fiscal year 1950. Approximately three-quarters of this reduction in force will become effective on July 1, 1949.

Increases in wages granted during the past year and higher material costs are important factors compelling the cutbacks.

In effect, there also has been a decrease in the funds available from wartime shipbuilding appropriations to make improvements on newly completed ships. Such improvements could be made out of the wartime shipbuilding appropriations for only a limited period of time after the completion of the ship. Most of the vessels completed since the war are now passing through that period. Hence, there is, in a sense, a decrease in the funds available for expenditure in the Naval shipyards on these newer vessels.

Prospective employment for the 11 shipyards, along with present employment figures follow:

	Mar. 31, 1949 Employment	July 1, 1949 Employment	Average Employment Fiscal 1950
East Coast			
Portsmouth ..	5,507	5,300	5,350
Boston	9,926	8,600	8,200
New York ...	12,280	12,300	12,250
Philadelphia .	10,298	9,650	8,900
Norfolk	10,439	9,500	9,100
Charleston ..	7,041	6,400	6,400
West Coast			
Long Beach .	7,451	5,900	5,900
San Francisco	7,112	6,900	6,600
Mare Island .	10,650	9,750	9,300
Puget Sound .	9,502	9,000	9,000
Pearl Harbor.	6,219	5,800	5,500
TOTALS ..	96,425	89,100	86,500

Modernizes Reduction Mill

Gary

• • • **F. H. McGraw & Co.,** engineers and contractors specializing in steel mill construction and rehabilitation work, have just completed a modernization job on a three-stand cold reduction mill for Carnegie-Illinois Steel Corp. at the Gary Sheet and Tin Mill here.

Modernization of the three-stand mill, which consisted mostly of electrical, mechanical, and piping work, got under way late in March and required a 45-day shutdown of operations. The job was completed ahead of schedule.

Form Firm to Make "Colmol"

Pittsburgh

• • • **Colmol Co.** has been formed by Sunnyhill Coal Co., Pittsburgh, and Jeffrey Mfg. Co., Columbus, Ohio, to manufacture the continuous coal mining machine developed by Sunnyhill. Jeffrey is a manufacturer of mining machinery, materials handling and processing equipment. Sunnyhill, which has a strip mine and a deep mine, completed development of the auger-type continuous miner, called the "Colmol," last year.

"Early production" is anticipated for the new machine, which combines the functions of cutting, drilling and loading, and eliminates blasting.

Steel Users Don't Like F.O.B.

New York

• • • **F.o.b. or not f.o.b.**, that is the question. For the third time in as many years the steel industry has had a setback in clarification of the legality of the right to freight absorption to meet competition. The latest was the outlawing of the basing point system under the Rigid Conduit Case regardless of whether collusion was charged.

Some Federal Trade Commission officials and legal people feel that freight absorption can be practiced in steel but it is not that simple. Steel people feel that the vague explanations by FTC as to when freight can and cannot be absorbed are no solace from the Supreme Court decisions.

It seems clear that absorption of freight by a steel company by a systematic method could subject that firm to FTC action. The only remedies that could eliminate this chaotic condition from American industry are (1) clear cut action by Congress legalizing freight absorption, (2) a rehearing of the case by the Supreme Court and (3) a drastic change in the thinking of some Federal Trade Commissioners on freight absorption methods of selling.

The following study made by THE IRON AGE market research staff tells what steel users think about the f.o.b. system with them paying the freight. They don't like it. But whether their likes or dislikes will have anything to do with clarification remains to be seen.

Question:

"Do you prefer the former basing point price system on steel or do you prefer the new f.o.b. method whereby you pay all the freight?"

	Favor Basing Point Replies	Favor Basing Point Pct	Favor F.O.B. Replies	Favor F.O.B. Pct
Area "A" Plants				
Over 500 employees	193	88.1	26	11.9
Under 500 employees	474	84.9	84	15.1
Total	667	85.8	110	14.2
Area "B" Plants				
Over 500 employees	258	88.4	34	11.6
Under 500 employees	597	86.6	92	13.4
Total	855	87.2	126	12.8
Area "C" Plants				
Over 500 employees	57	96.6	2	3.4
Under 500 employees	267	89.3	32	10.7
Total	324	90.5	34	9.5
Total Reporting Plants	1846	87.2	270	12.8

In addition to these 2116 plants, there were 341 plants that answered the questionnaire but did not answer this question. These 2457 plants reported a total steel consumption of 15 million tons which figure is approximately one third of the total rolled and drawn steel consumed by the metalworking industry.

Area "A" includes Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida.

Area "B" includes Ohio, Indiana, Illinois, Michigan, Wisconsin, Kentucky, Tennessee, Alabama and Mississippi.

Area "C" includes Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas, Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Arkansas, Louisiana, Oklahoma, Texas, Washington, Oregon, California and Hawaiian Islands.

Briggs Set in Youngstown

Youngstown

• • • **Briggs Mfg. Co.** officials recently completed an inspection tour of the company's new stamping plant here. President W. D. Robinson said he was confident it would be "a good operation." Briggs purchased the former Upper Union bar and hoop plant of Carnegie-Illinois Steel Corp., which Carnegie combined with its McDonald mills.

Operations were ready to start last week in the plant which cost Briggs $1 million plus approximately $350,000 for presses and allied equipment. Unless auto strike conditions prevent it, the plant should be shipping body stampings to Briggs plants in Detroit this week.

In addition to Mr. Robinson, the inspection party included five other Briggs executives who flew in from Detroit to look over the new setup and talk to W. T. Hanlon, Youngstown plant manager.

Designing Big Generator

Pittsburgh

• • • **Indicative of the** increasing capacity of power generator units is a 110,000-kw, 3600-rpm, single-shaft, triple-exhaust turbine generator now being designed by Westinghouse for Union Electric Power Co. of St. Louis. This is larger than any 3600-rpm turbine-generator unit of this type ever undertaken. The new turbine will have a maximum capability of 121,000 kw at 3.0 in. of hydrogen.

AMERICAN IRON AND STEEL INSTITUTE

Production of Open Hearth, Bessemer and Electric Steel Ingots and Steel for Castings

YEAR 1949

(Preliminary)

Period	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (Net tons)	Number of weeks in month
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
January	7,287,683	101.1	408,552	92.6	487,260	93.8	8,183,495	100.2	1,847,290	4.43
February	6,633,779	102.0	379,698	95.3	467,247	99.6	7,480,724	101.4	1,870,181	4.00
* March	7,473,901	103.7	430,176	97.5	483,850	93.2	8,387,927	102.7	1,893,437	4.43
* *1st Quarter*	*21,395,363*	*102.3*	*1,218,426*	*95.2*	*1,438,357*	*95.4*	*24,052,146*	*101.5*	*1,870,307*	*12.86*
† April	7,017,389	100.6	404,095	94.6	362,323	72.0	7,783,807	98.4	1,814,407	4.29
Ma										4.43

† Preliminary figures, subject to revision.
* Revised.

YEAR 1948

Period	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL		*Calculated weekly production (Net tons)	Number of weeks in month
	*Net tons	*Percent of capacity	*Net tons	*Percent of capacity	*Net tons	*Percent of capacity	*Net tons	*Percent of capacity		
January	6,770,831	95.6	343,263	77.5	366,784	80.2	7,480,878	93.7	1,688,686	4.43
February	6,247,491	94.4	340,689	82.3	359,837	84.2	6,948,017	93.1	1,678,265	4.14
March	6,845,777	96.6	363,334	82.0	409,659	89.6	7,618,770	95.4	1,719,813	4.43
1st Quarter	*19,864,099*	*95.5*	*1,047,286*	*80.6*	*1,136,280*	*84.7*	*22,047,665*	*94.1*	*1,695,974*	*13.00*
April	5,640,273	82.2	185,140	43.2	399,074	90.1	6,224,487	80.5	1,450,929	4.29
May	6,801,633	96.0	355,659	80.3	423,350	92.6	7,580,642	94.9	1,711,206	4.43
June	6,484,114	94.5	356,907	83.2	424,228	95.8	7,265,249	94.0	1,693,531	4.29
2nd Quarter	*18,926,020*	*91.0*	*897,706*	*69.0*	*1,246,652*	*92.8*	*21,070,378*	*89.9*	*1,619,552*	*13.01*
1st 6 Months	*38,790,119*	*93.3*	*1,944,992*	*74.8*	*2,382,932*	*88.8*	*43,118,043*	*92.0*	*1,657,749*	*26.01*
July	6,348,611	89.8	325,080	73.6	401,826	88.1	7,075,517	88.8	1,600,796	4.42
August	6,633,443	93.6	371,306	83.8	442,085	96.7	7,446,834	93.3	1,681,001	4.43
September	6,594,499	96.3	387,259	90.5	443,086	100.3	7,424,844	96.2	1,734,777	4.28
3rd Quarter	*19,576,553*	*93.2*	*1,083,645*	*82.6*	*1,286,997*	*95.0*	*21,947,195*	*92.7*	*1,671,530*	*13.13*
9 Months	*58,366,672*	*93.2*	*3,028,637*	*77.4*	*3,669,929*	*90.8*	*65,065,238*	*92.2*	*1,662,372*	*39.14*
October	7,120,753	100.5	409,657	92.5	466,485	102.0	7,996,895	100.1	1,805,168	4.43
November	6,925,043	100.9	411,161	95.9	461,354	104.2	7,797,558	100.8	1,817,613	4.29
December	6,927,689	98.0	393,717	89.1	459,373	100.7	7,780,779	97.7	1,760,357	4.42
4th Quarter	*20,973,485*	*99.8*	*1,214,535*	*92.5*	*1,387,212*	*102.3*	*23,575,232*	*99.5*	*1,794,158*	*13.14*
2nd 6 Months	*40,550,038*	*96.5*	*2,298,180*	*87.5*	*2,674,209*	*98.6*	*45,522,427*	*96.1*	*1,732,867*	*26.27*
Total	79,340,157	94.9	4,243,172	81.2	5,057,141	93.7	88,640,470	94.1	1,695,495	52.28

Note—The percentages of capacity operated are calculated on weekly capacities of 1,599,286 net tons open hearth, 99,962 net tons Bessemer and 103,228 net tons electric ingots and steel for castings, total 1,802,476 net tons; based on annual capacities as of January 1, 1948 as follows: Open hearth 83,610,690 net tons, Bessemer 5,226,000 net tons, Electric 5,396,770 net tons, total 94,233,460 net tons.

Mineral Fuel Reserves Declared Sufficient For 100 to 300 Years More

Cleveland

• • • **Coal must develop** products that fit changing demands if it is to have a larger share of a growing energy market, George A. Lamb, Pittsburgh Consolidation Coal Co., told mining men here.

Speaking at the coal utilization and marketing session of the 1949 Coal convention and exposition of the American Mining Congress, held here May 9-12, Mr. Lamb said that competitive fuels have made some inroads into coal's traditional markets, particularly through railroad dieselization, increased use of oil and natural gas for space heating and in manufacturing.

Other highlights of Mr. Lamb's speech included:

In 1948, compared with the 1935-1939 annual average, the energy market increased 64 pct; Gross National Products 65 pct, based on constant dollar value; and the Federal Reserve Board index of manufacturers 98 pct.

Between comparable periods, market increases for fuel were, according to Mr. Lamb; natural gas, 154 pct; petroleum, 63 pct; bituminous coal, 40 pct, and anthracite, 11 pct.

Additional energy will be required with the growth of the economy. Mr. Lamb cited estimates indicating that Gross National Product will increase 25 pct between 1947 and 1965, taking into account expected growth of population and industry and other factors. Which means that fuel requirements will rise similarly.

A 25 pct jump in fuel energy, holding coal at its 1947 level, would necessitate that petroleum and natural gas would have to expand their outputs 53 pct.

It would appear that petroleum and natural gas outputs would rise 30 pct and 60 pct respectively and coal tonnage would increase 12 pct, resulting in a market for bituminous of approximately 700 million tons some 16 years hence.

In case of a global war during the next several years, a market of similar size probably could develop.

"This year has been marked by competition in the fuel business that has not been present since prewar days. Yet the 1949 market for total energy may set an all-time record," Mr. Lamb said.

He pointed out that while demand for coal may tend to be largely inelastic over a short period, it assumes quite a different makeup over a period of several years.

As to the 1949 market for bituminous coal, he forecast a slight market decline compared to 1948, due largely to high consumer stocks built up during 1948; warm weather in many coal consuming areas; and the dumping of residual fuel oil on the market.

Speaking at the same session, Arno C. Fieldner, chief, fuels and explosives division, U. S. Bureau of Mines, said estimated fuel resources of the U. S. as of Jan. 1, 1949, consist of 1552 billion net tons of recoverable coal, 200 billion barrels of crude oil recoverable from oil shale and oil-sand deposits, 26.8 billion barrels of proved petroleum and natural gas liquids, and 174 trillion cu ft of proved natural gas reserves.

"It appears that we have mineral-fuel resources for 100 to 300 years and that we will have improving conditions of supply for the near future," he declared.

Mr. Fieldner, pointing up the decline of high-grade and high-rank coking coals so important to the steel industry, said the decline in reserves of high-grade and high-rank coking coals brings to the forefront the importance of blending coals to obtain metallurgical coke of satisfactory quality.

"Blending affords a means of enlarging the country's coking-coal reserves by blending poorly coking coals with those that are unusually rich in coking power. In many instances, a better coke can be obtained by a judicious blend of two or three different coals than can be made from any one of the three by itself."

He said blending of high- and low-volatile coal is common practice in order to obtain a strong coke, relatively free from shrinkage cracks, and a minimum of coke breeze.

In future, the problem of blending will be much greater, owing to shortage of the most desirable coals. This need is being recognized by industry and government agencies. Increasing attention is being given to research with experimental ovens primarily to determine the physical properties of cokes obtainable with various blends of coals, including research on the expanding properties of the

HOLD THAT TIGER: *The latest in mining equipment greeted coal executives at the recent Mining Congress at Cleveland. Left to right, with the tiger hanging overhead from its lair in the Carter Hotel, are: Harry Moses, president, U. S. Steel's H. C. Frick Coke Co. (who will soon be knee deep in coal contract negotiations); S. M. Cassidy, president, Consolidation Coal Co., Jenkins, Ky.; H. I. Young, president, American Zinc, Lead & Smelting Co., St. Louis; J. H. Fulford, vice-president, Jeffery Mfg. Co., Columbus, Ohio.*

coal charge and the effect of various size consists of the charge.

More than 10,000 mining men attended the four-day coal convention and exposition, which featured further modernization of methods and equipment to increase efficiency and safety in coal mines and to lower costs to meet competition of other fuels.

The industry expects that in the long run coal can broaden its current large markets in the public utility field and increase the quantity of coal going for industrial and home heating purposes. It is active in development of new coal burning gas turbines which may furnish the railroads with locomotive power at low cost, with experiments with gasification of coal underground, in synthetic fuel production, and the development of an efficient continuous mining system.

The exposition included more than 220 displays of every type of mining machinery, equipment and supplies, including equipment needed to mine, haul, clean and prepare coal for the consuming public, and comprising, according to convention officials, the greatest collection of such equipment ever assembled under one roof, 44 pct larger than the last coal exposition held here 2 years ago.

On display for the first time in an industry-wide show was the 26-ton Colmol, a continuous mining machine that drives a 9½ ft face in one operation and will produce more than 100 tons of coal per man day. The Colmol was developed by Sunnyhill Mining Co., Pittsburgh. Jeffrey Mfg. Co., Columbus, Ohio, announced last week that they will manufacture the machine.

Also on display was Joy Mfg. Co.'s Continuous Miner. Made at the Joy plant at Franklin, Pa., 28 Continuous Miners are now working in coal mines.

Another exhibit of considerable interest was the "Tournahopper," giant 50-ton capacity coal hauler and said to be the largest self-propelled materials hauling unit ever built, according to R. G. LeTourneau, Peoria, Ill., manufacturer.

Discusses Properties Of Commercial Titanium

Springfield, Mass.

• • • **W. L. Finlay** and E. L. Wemple of Remington Arms Co., recently presented a paper entitled "Metallography and Properties of Commercially Pure Titanium." Two interesting metallographic facts were noted: namely that titanium changes from hexagonal-close-packed to body-centered cubic above 885°C and that titanium twins mechanically when deformed at room temperature. The latter required care in removing the effected surface immediately below the scratches produced in the early metallographic polishing steps before final polishing.

Titanium is intermediate between aluminum alloys and stainless steel in specific gravity, about equal to them on a strength-weight ratio, has a higher melting point than either, and has twice the annealed yield strength of 18-8.

An interesting conclusion to this paper was a list of possible applications for titanium as follows:

(1) Airframe skins and structures where intermediate temperatures or corrosion problems are encountered.

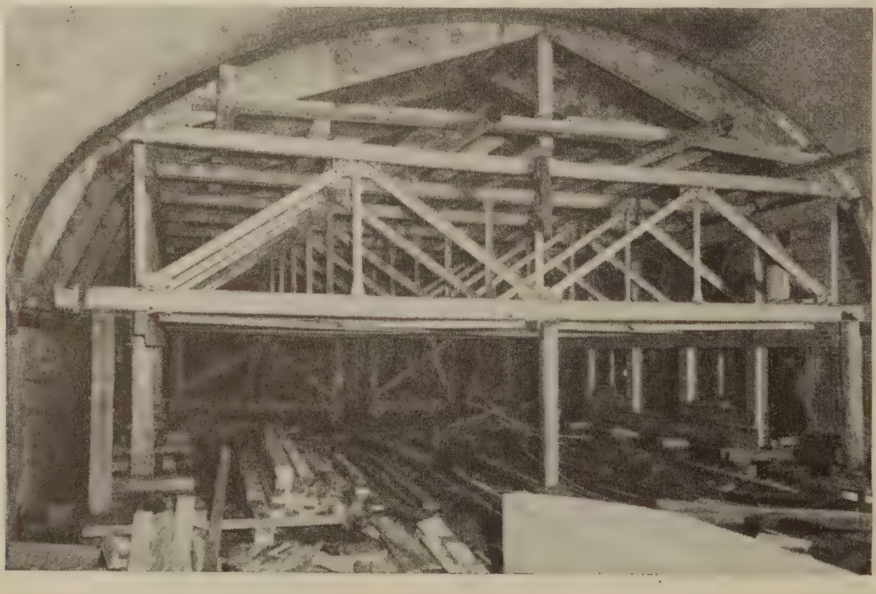
(2) Aircraft power plants where temperatures between 300° and 800°F are involved.

(3) Naval or marine applications in which the combination of superior corrosion resistance and light weight are important.

(4) Industrial equipment in which titanium's particular corrosion resistance can be utilized.

(5) Miscellaneous applications in which a combination of light weight, corrosion resistance, high strength and intermediate temperature properties are required.

UNDERGROUND COAL PREPARATION: *Construction of arch roof for underground coal crushing plant is being done by Dravo Corp., Pittsburgh for Jones & Laughlin Steel Corp. Located about* 110 *ft below ground at Vestaburg, Pa., the crusher room is* 33½ *ft wide,* 52 *ft long and* 78 *ft deep from the crown of the arch to the conveyer pit.*



Nash Resumes Production

Kenosha, Wis.

• • • **By removing** its brake dies from the struck Bendix plant at South Bend, Ind., Nash Motors plants have reopened after being shut down since Apr. 21. Production of brakes will be undertaken at another location, according to R. A. DeVlieg, vice-president in charge of manufacturing.

About 12,000 Nash employees have been idled by the Bendix strike. The company's assembly plant in California was not affected.

Industrial Peace at Sharon Cited by National Planning Assn.

Company and Union Both Get Praise; List 12 Reasons For Industrial Peace

Washington

• • • **Confidence is not** a one-way street—it never travels in one direction."

And mutual confidence between employer and employee is a keystone of good labor-management relations, in the opinion of Henry Roemer.

The National Planning Assn., in an analysis of the record 12-year-old industrial peace that has prevailed at the Sharon Steel Corp., says the mutual confidence and respect shown by Mr. Roemer, Sharon's president, and John W. Grajciar, director of the United Steelworkers' Sharon District, have been key factors in the company's enviable record of industrial peace.

Sharon steel, ninth ranking steel producer in volume and thirteenth in net sales, is an outstanding example of harmonious and trouble-free labor relations, NPA said last week in a report, "Causes of Industrial Peace—Sharon Steel Corp. and United Steelworkers of America."

"No collective bargaining relationship is healthy or stable unless the benefits derived from it are distributed equitably among all the parties involved—the employees, the owners, the management, the customers, the suppliers, and the public," NPA observes. "All of these parties have benefited from Sharon's harmonious management-labor relations."

The achievement of labor peace at Sharon has required patience, understanding, and painstaking work of both management and employees, but it has not been bought at the expense of the company's economic position, stockholders, or the public, NPA states. And not only do the Sharon wage structure and the earnings of its employees compare favorably with industry and community averages, the association adds, but also:

(1) The company's competitive position in the basic steel industry has improved significantly during the course of the relationship and manhour productivity has increased steadily. The company's capital investment per ton of rated ingot capacity is the lowest in the industry.

(2) The profits and dividends of the company have increased at a faster rate than for the industry as a whole.

(3) The quality and price of Sharon's products have compared favorably with those of its competitors.

The "causes" of industrial peace are of two kinds, NPA says: external causes, over which the company and employees have little control; and internal causes, which are within the direct control of Sharon's management and the union.

The external causes can be summed up as (1) the sustained high demand for steel, and (2) the pattern bargaining in the steel industry which has eliminated much of the haggling, exhausting debate, and emotional frustration and bitterness which frequently characterize contract negotiations, NPA believes.

But "internal causes" are given a higher rating by NPA than the "external causes." Again, the association points out, the mutual confidence and respect of the union and the management are basic. The 12 internal causes named by NPA are:

(1) The fact that the relationship was established, and the original agreement signed without bitterness and strife.

(2) Effective communications and consultation between the parties.

(3) Management's flexibility—its willingness to experiment, to adjust and even to improvise.

(4) Management's firmness—it doesn't give anything to the union merely for the sake of avoiding a scrap.

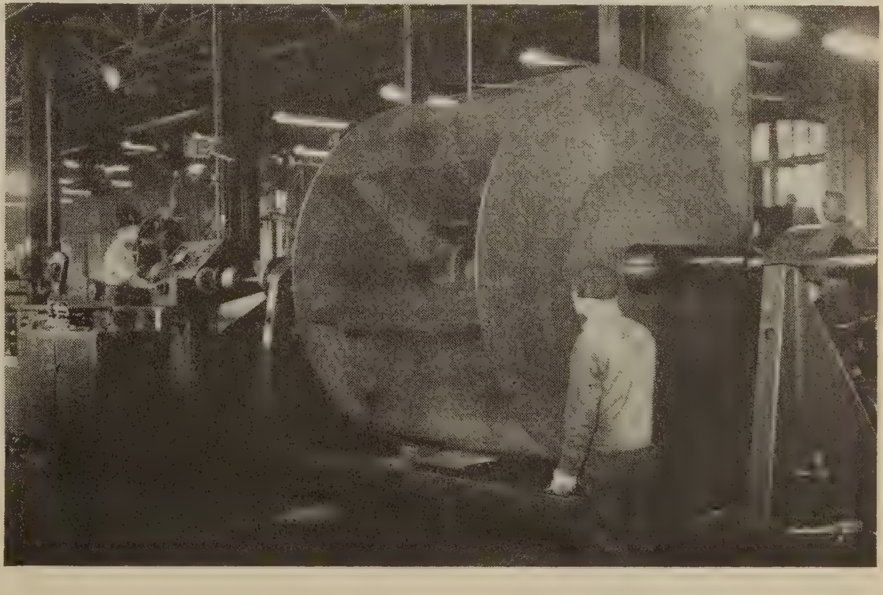
(5) Management's sustained effort to encourage a strong and responsible union.

(6) Top management's dissemination of its policies and practices to lower levels.

(7) Cooperation between line and staff personnel.

(8) Management's prior consultation with union representa-

PRECISION BALANCING: *Unbalance—the cause of vibration in such rotating devices as this 8½ ft diam.* 13,500-*lb fan wheel and shaft—can be located in* 1/3 *the time required for mechanical balancing with this balancing machine used by Westinghouse at Hyde Park, Mass. It is possible to dynamically balance large air moving assemblies weighing from* 1500 *to* 25,000 *lb to* 2.5/100,000 *in. of linear movement of the floating bearings.*



tives regarding changes in policies and procedures.

(9) The high caliber of union leadership.

(10) The responsible character of the union—its respect for its commitments and legitimate obligations.

(11) The union's efforts to avoid factionalism within or between the locals.

(12) Union efforts to increase the responsibility and authority of local union officials.

"It takes two to make peace, just as it takes two to make a fight," NPA sums up in conclusion. "Both union and management, with some assistance from a few factors largely beyond their control, have made great contributions.

"The result of these contributions has been a relationship which contains valuable lessons for anyone interested in the nature and causes of industrial peace. Moreover, it is a relationship of which Sharon and USA may be justly proud."

Sees Advancement In Present Methods Aircraft Propulsion

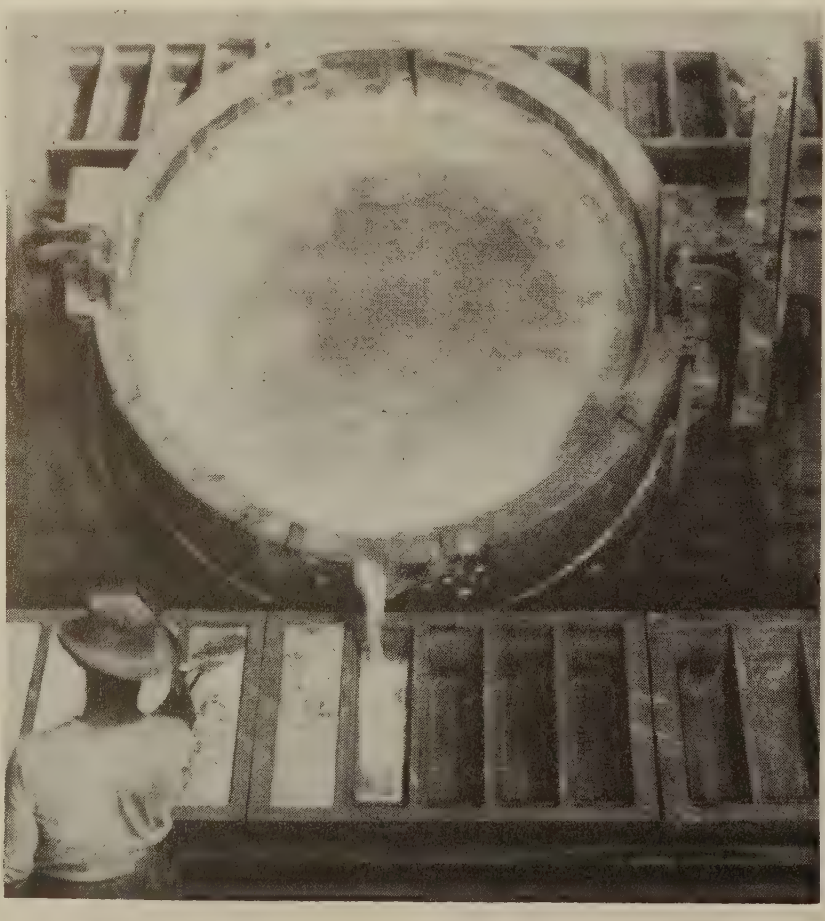
Chicago

• • • **Before the annual meeting of the American Institute of Chemists held at the Edgewater Beach Hotel in Chicago, John T. Rettaliata, dean of engineering,** Illinois Institute of Technology, declared that within the next 10 years the piston engine will be a thing of the past. The speaker told the convention that the gas turbine or jet engine will be used on American commercial airlines within the next 5 years. He prophesied, "Some of the gas turbine engines on airliners 10 years from now may drive propellers and some jets alone, but you will see no more piston engines."

The speaker pointed out that although this country has no commercial jet planes as yet the British have been experimenting with four models. Further, all of this country's high speed military planes are being built with gas turbine engines.

Mr. Rettaliata went on to tell the group that current research is being directed along two lines for jet engines, new materials and new design. He mentioned an experimental turbine with ceramic blades which had been run up to 3000°F. Other work is being done on ceramic coated metals called Cermets or Ceramels. The speaker declared that he didn't think jet propelled automobiles were feasible. He said the efficiency of the gas turbine engine is too low and the size of the fuel tank required would be too big for automobiles. The exhaust problem of jet engines on the highway alone almost defeats this application.

ALUMINUM PIG: *First aluminum "pigs" poured by Reynolds Metals Co., at their newly opened pot line, Jones Mills, Ark. Entire production of 3 million lb per month will be made into aluminum cable, steel reinforced for distribution to REA cooperatives throughout the country.*



Lead Producer Starts Modernization Program

Trail, B. C.

• • • **Consolidated Mining &** Smelting Co. of Canada, Ltd., has plans for major plant improvements and expansion, according to official report. The major commitment by the company is the expenditure of $12 million for modernization of its lead smelter here. Work on this project already has been started. The program will be carried out over a period of 4 or 5 years without interfering with normal production.

Consolidated Smelters is unique among the big lead producers on this continent in that it has its own assured ore supply on which to base expenditures of the magnitude required for the construction of a new smelter.

Steel Wire Production Up

Toronto

• • • **Canadian producers** shipped 9930 tons of steel wire in February as compared with 8177 tons shipped in the same month last year. For the first 2 months this year shipments totaled 20,938 tons against 18,549 tons in the corresponding period of 1948. For the 2 months this year wire production amounted to 28,219 tons against 25,082 tons a year ago.

Trade Circles See Possibility of An Early Reduction In Price of Tin

o o o

By JOHN ANTHONY

Eastern Regional Editor

o o o

New York

• • • **Speculation** is rife in trade circles as to the possibility of an early reduction in the price of tin. At $1.03 per lb, for which tin has been sold since June, 1948, the metal is close to the all-time-peak price of $1.10 which prevailed for a short time in 1918.

There is no doubt that tin consumption is leveling off, in line with the trend general in the metal and other industries. According to the Statistical Bulletin of the Tin Study Group, world consumption in January, 11,100 long tons, was 430 tons below the 1948 monthly average. Consumption by the United Kingdom during the six month period ending in January has been well below the 1947 level. More recent information from the tin trade indicates an accelerated decline in United States consumption.

World production of tin metal is rising, however, due principally to heavier Malayan production. The January total of 14,500 tons exceeded consumption by 3400 tons. This rate was higher by 1200 tons than the average monthly production in 1948. But world production of tin-in-concentrates dropped sharply in January to 12,600 tons from the December postwar peak of 14,900 tons. This was due to a decline in Bolivian exports and a decrease in Indonesian production. Concentrates production was nevertheless 1500 tons above January consumption.

World stocks of tin in metal and concentrates have been growing rapidly when consideration is given to shipments to the United States stockpile. At the end of 1948, they were reported at 132,200 tons, but this does not include a transfer of 24,077 tons of tin metal to the stockpile at the end of December. With this tonnage included, the total of 156,200 tons exceeded all previous yearend stocks back to the turn of the century except during the war years from 1941 to 1946.

There is no one in the United States who can say with certainty if and when there will be a reduction in the price of tin. Most of the speculation in the trade revolves around the date of June 30. The keystone in the tin price structure is the contract of the British Ministry of Supply to take all Malayan production at an agreed price. The Ministry also buys all Nigerian production and some Bolivian concentrates. This contract ends on June 30. As the principal marketer of tin, the British Ministry is unlikely to give advance information to its customers, including the United States Government, on any proposed reduction in price.

One factor which would tend to stiffen the British resistance to a reduction in the tin price at this time is the assured market represented by the United States stockpile. Although very little information has been made available on the objectives and present tonnage of the tin stockpile, it has been learned that the total tonnage of tin to be acquired is well below the approximately 300,000 tons which would represent the original rule of thumb total objective of 5 years of normal consumption. Such a tonnage would not be necessary to domestic security in the view of experts because of the operation of the government smelter at Texas City, Tex.

Government controls over the use of tin will expire at the end of June, unless a new control measure is introduced into Congress and passed by that time.

Emergency Output Rate Would Take Builders Of Tools a Year to Reach

Chicago

• • • **It would take** most machine tool builders from a year to a year and a half to attain production rates outlined for them by the National Security Resources Board in the event of a national emergency, A. G. Bryant, chairman of the Government Relations Committee and ex-president of the National Machine Tool Builders Assn., told members at the 47th spring meeting of the group at the Edgewater Beach Hotel, Chicago, May 11 to 13. Projected schedules of production for machine tool builders in the event of an emergency are meaningless, he said, unless the industry is currently in a position to maintain a rate of operations that would enable it to shift to a wartime basis. Currently, the rate of operations for the industry as a whole is something less than 40 pct of capacity.

A matter of vital concern has been the depletion of already inadequate reserves of machine tools maintained by the services as a residue of war surplus. The withdrawal of several thousand machine tools from the 103,000 machine stock to create pilot lines and to equip subcontractors' shops for production of present defense equipment, Mr. Bryant charged, is false economy. He urged that either the machines taken from reserve be replaced through the purchase of latest models or new machine tools be bought and used in current production requirements.

While the general tax program proposed by the President in his message to Congress is not likely to be achieved this session, there appears much wider recognition of the importance of a change among members of Congress and administrative officials. It was suggested that perhaps the recent action of the socialist government of Great Britain in further liberalizing its already improved amortization scale has something to do with a recognition by the United States government of the value of recommendations in this matter.

The ineffectiveness of present accounting practices in dealing with industrial capital investments was discussed by Jerome A. Raterman, president of Monarch Machine Tool Co.

James C. Hebert, general sales manager of Jones & Lamson Machine Co., outlined the association's sales training courses for the coming year. There will be four individual courses.

Construction Steel . . .

• • • **Fabricated steel awards** this week included the following:

1050 **Tons,** James River, Va., towers on each side of James River Crossing for Virginia Electric Co. through Stone & Webster Engineering Corp. to American Bridge Co., Pittsburgh.

700 **Tons,** Rockford, Ill., power station extensions for Central Illinois Gas Co. through Stone & Webster Engineering Corp. to Allied Structural Steel Co.

650 **Tons,** Niagara Falls, N. Y., warehouse for Kimberly-Clark Corp., to Bethlehem Steel Co., Inc., Bethlehem, Pa.

335 **Tons,** South Bend, Nebr., 9 girder spans for the Rock Island R.R. to Bethlehem Steel Co., Inc., Bethlehem, Pa.

325 **Tons,** New York, hospital addition, Rockefeller Institute for Medical Research, 66 St. & York Ave., to Grand Iron Works, New York.

300 **Tons,** Edgewater, N. J. new building for Lever Bros. through Stone & Webster Engineering Corp. to American Bridge Co., Pittsburgh.

260 **Tons,** Houston, Tex., enlargement of North Side Sewage Treatment Plant for City of Houston, to Mosher Steel Co., Houston.

195 **Tons,** Mankato, Minn., high school building to St. Paul Structural Steel Co., St. Paul, Minn.

185 **Tons,** Philadelphia, reception center, to Cantley & Co., Philadelphia.

175 **Tons,** Boyes Hot Springs, Calif., Archbishop Hanna Center for Boys, through Williams & Burrows, Burlingame, to Herrick Iron Works, Oakland, Cal.

170 **Tons,** Garfield, N. J., manufacturing building for Forstmann Woolen Co. through Stone & Webster Engineering Corp. to Bethlehem Fabricators, Bethlehem.

165 **Tons,** Colorado Springs, Colo., state highway bridge FG-276-2 to Midwest Steel & Iron Works, Denver, Colo.

125 **Tons,** Springfield, Ill., hangar building for National Guard to Mississippi Valley Structural Steel Co., Decatur, Ill.

100 **Tons,** Union City, N. J. Church, St. Anthony's Parish to Grand Iron Works, New York.

• • • **Fabricated steel inquiries** this week included the following:

800 **Tons,** Swatara Creek, Dauphin County, Pa., Pennsylvania Turnpike Section 23A-1, bridge, due May 31.

600 **Tons,** Jefferson, Wis., County Court House, bids due May 27.

220 **Tons,** Vermillion County, state highway bridge section 34-Z-1-SF. Milwaukee Bridge Co., Milwaukee, low bidder.

220 **Tons,** Montgomery County, Ill., state highway bridge section 117-1SF. Milwaukee Bridge Co., Milwaukee, low bidder.

180 **Tons,** Gallitzin, Pa., bridge for Pennsylvania Railroad, due May 23.

175 **Tons,** White County, Ill. State highway bridge section 1F, Milwaukee Bridge Co., low bidder.

• • • **Reinforcing bar awards** this week included the following:

685 **Tons,** Chicago, Wacker Drive extension through Hurlihy-MidContinent Co., Chicago, to J. T. Ryerson & Son, Chicago.

650 **Tons,** Houston, Tex., enlargement of North Side Sewage Treatment Plant for City of Houston, to Peden Iron & Steel Co., Houston, through Birmingham office of Rust Engineering Co., general contractors.

112 **Tons,** Selma, Ala., grain elevator for Black Belt Elevator & Feed Co., Inc., to Connors Steel Co., Birmingham, and Truscon Steel Co., Birmingham.

100 **Tons,** Arlington, Mysticside elementary school through Bossi Construction Co. to Northern Steel Co., Boston.

• • • **Reinforcing bar inquiries** this week included the following:

475 **Tons,** Chicago, Roscoe Street sewer for the city of Chicago, John C. Tully Co., Chicago. This inquiry inadvertently reported last week as 135 tons.

300 **Tons,** Danville, Pa., Geisinger Memorial Hospital, Ralph Wolfel, Hazelton, Pa., low bidder.

300 **Tons,** Bethesda, Md., utility building, National Institute of Health, McCloskey & Co., Philadelphia, low bidder.

236 **Tons** Yuma Co., Ariz., construction on Ehrenberg-Wickenburg Highway, State Highway Commission, Phoenix, bids to May 27.

200 **Tons,** West Chester, Pa., Chester County Hospital, McCloskey & Co., low bidder.

130 **Tons,** Grant Co., Wash., construction on S.S.H. No. 2-F, Odair to Electric City, Director of Highways, Olympia, bids to May 27.

• • • **Steel plate awards** this week included the following:

175 **Tons,** Embreeville, Pa., 2 500,000-gal. water tanks, Pa. Dept. of Properties & Supplies, to Chicago Bridge & Iron Co., Chicago.

50 YEARS AGO

THE IRON AGE, *May 18, 1899*

• "In the early days of rolling mills the machinery was of the crudest character. The men who built and looked after it were called millwrights or forge carpenters; consequently wood was used in its construction to as great an extent as was possible."

• **"Today the world's supremacy in the metallurgical art is conceded to us. It has been wrested from Great Britain."**

• "The consumers who are earnestly hoping for a break in the price of iron and steel to correspond with the recent break in the stock market will evidently have a long wait. All the indications are in favor of higher rather than lower prices."

• **"The Westinghouse Electric & Mfg. Co. of Pittsburgh have received a contract to supply the electrical lighting apparatus for the White House and the White House grounds at Washington, D. C."**

• "Pittsburgh is much greater commercially than the statistics of the enumeration of her inhabitants would indicate. The census of 1890 placed within her municipal border 239,000 people, but unfortunately for our statistical record, our border lines are very circumscribed."

• **"The formal organization of the Republic Iron & Steel Co. has been completed and the transfer of the various constituent companies has been concluded."**

• "A dispatch from Paris says that M. Ducretet, the engineer of the Eiffel Tower, has invented a system of wireless telegraphy by which he claims communication can be carried on between Paris and New York, providing poles 3000 ft high are erected."

• **"The English shipbuilding interest has experienced a decided falling off in business lately on account of the high price of metals."**

Producing Nodular Iron Castings for Industry

Benton Harbor, Mich.

• • • **Benton Harbor Malleable** Iron Foundry is producing nodular cast iron under license from the International Nickel Co., according to an announcement by A. J. Edgar, works manager.

Development work has been in progress since Mar. 1, according to Mr. Edgar. Sample castings for the automotive, agricultural and machine tool industries have been successfully produced and interest in the development is increasing. Up to the present time, approximately 20 tons of sample castings have been made.

Other establishments in the Michigan area producing nodular cast iron under license at the present time include Dostal Permold, Pontiac and Albion Malleable Iron Co.

Notes on Nodular Irons

(CONTINUED FROM PAGE 102)

appeared two papers in Germany by Piwowarsky[13] and Adey[14] and finally the magnesium process has been described and illustrated[15, 16]. Subsequently, discussions of the cerium process[17] and the magnesium process[18] have been made by DeSy. In a paper to a technical or scientific society it is difficult to quote references other than these, except when a process is known to be definitely established. In all the references quoted, except the book by Piwowarsky, the occurrence of nodular graphite structures is actually illustrated photomicrographically.

The present writer hopes that this note will help to clarify the position as far as it is seen at the British Cast Iron Research Assn. and that Mr. Smalley will be provoked to publish some details about his discovery "which covers also the production of the nodular graphite structure in a matrix of either ferrite or pearlite, according to the properties desired in the finished casting."

Finally, it should be pointed out that this note is not meant to imply that nodular structures cannot be produced by tellurium additions.

H. MORROGH
Research Manager
British Cast Iron Research Assn.
Alvechurch, Birmingham

References

[1] H. Hanemann and A. Schrader, Atlas Metallographicus, vol. 2, section 5, sheet 37, Berlin 1936. Gebruder Borntraeger.

[2] H. Nipper, Giesserei, 1936, vol. 22, p. 27.

[3] H. Grober and H. Hanemann, Archiv fur das Eisenhuttenwesen, vol. 11, 1937, p. 199.

[4] H. Morrogh and W. J. Williams, Journal of the Iron and Steel Institute, March 1947.

[5] C. Adey, German Patent Application, Akt. G98710, Class 186/1/22, Sept. 17, 1938.

[6] E. Piwowarsky, Hochwertiges Gusseisen, Berlin 1942. Julius Springer, p. 245.

[7] A. I. Krynitsky and C. M. Saeger, Trans. American Foundrymen's Society, vol. 50, 1942, p. 451.

[8] H. Morrogh, Journal of the Iron and Steel Institute, No. II, 1946, p. 399.

[9] H. Morrogh and W. J. Williams, Proceedings, Institute of British Foundrymen, 1946/1947, vol. XL, Paper No. 875.

[10] H. Morrogh and W. J. Williams, Journal of the Iron and Steel Institute, March 1948, p. 306.

[11] H. Morrogh and J. W. Grant, Proceedings, Institute of British Foundrymen, 1947/1948, vol. XLI, Paper No. 898.

[12] H. Morrogh, American Foundryman, April 1948, p. 91.

[13] E. Piwowarsky, Die Neue Giesserei, No. 1, July 1948, p. 2.

[14] C. Adey, Die Neue Giesserei, No. 3, vol. 1, September 1948, p. 67.

[15] A. P. Gagnebin, K. D. Millis, and N. B. Pilling, THE IRON AGE, Feb. 17, 1949, p. 77.

[16] C. H. Donoho, American Foundryman, February 1949, p. 30.

[17] A. DeSy, American Foundryman, January 1949.

[18] A. DeSy, American Foundryman, January 1949, p. 60.

Rail Steel Bar Men Discuss Competition

Chicago

• • • **New officers** elected at the annual meeting of the Rail Steel Bar Association held in Chicago May 12 and 13: top row left to right, William H. Jacobs, secretary, Carl Weber, director, Roy Scholl, director; bottom row left to right, O. W. Irwin, president, W. B. Caldwell, chairman of the board, and A. E. Klinger, treasurer. Messrs. Irwin and Jacobs are permanent officers and the other four men make up the board of directors for the association. Carl Weber is director of research, Laclede Steel Co., St. Louis; Mr. Scholl is assistant to vice-president, Connors Steel Co., Birmingham; Mr. Klinger is president of Buffalo Steel Co., Tonawanda, N. Y., and Mr. Caldwell is vice-president and general manager, Calumet Steel and Franklin Steel Div. of Borg-Warner Corp., Chicago.

The agenda included a review of performances in 1948 and a discussion of steps to meet the highly competitive situation now before the industry. Research activities of the association were also reviewed.

Last year the industry consumed more than three-quarters of a million tons of used rails. Through the reclaiming process in vogue, these rails were converted into high strength steel sections such as are used in mining, agricultural implements, furniture and construction. Largest tonnage item was concrete reinforcing bars which accounted for approximately 35 pct of the total. In former years as high as 75 pct of the output was in concrete bars, last year having been the first full year following a drive to diversify the industry's products.

The Works Managers Group of the association is in the midst of two important studies. One study relates to furnace practice in the heating of used rails before rolling. Aim of this study is better products at lower cost. The other project is a job description and job evaluation study.

The industry is trying to improve its public relations through the showing of a 35 min, 16 mm kodachrome film in which Lowell Thomas is the narrator. In 5 months of distribution the film has been shown in 33 states to more than 100,000 people.

BIG JOBS...

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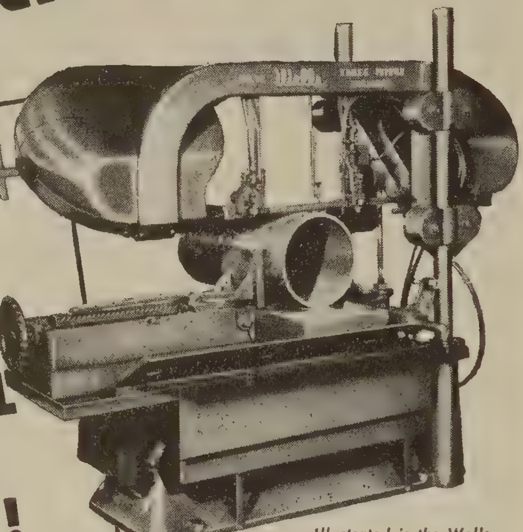

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CUT-OFF CAPACITY:	
Rectangular	12" x 16"
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DIE BLOCK CAPACITY:	
Maximum Cutting	12¾" deep; 16" wide
Maximum Clearance, Bed to Blade	18"
SPEEDS, Selective	50, 90, 150 ft. per min.
MOTORS	⅓ H.P. & ¾ H.P.
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Undertakes Survey On Modular Coordination

Cambridge, Mass.

• • • **The first project** to be undertaken by the Building Research Advisory Board, National Research Council, will be a survey to determine why modular coordination of building materials, equipment and design has not yet found wider practical use, despite its extensive technical development. Modular coordination involves the use of multiples of a basic 4-in. module in determining the dimensions of construction materials and features such as masonry, doors, windows, etc.

Its use is intended to simplify standardization of building materials and equipment, and to reduce the cost of on-site construction. The project is undertaken under a research contract from the Housing & Home Finance Agency which has been authorized by Congress to promote the wider use of standardized dimensions as a means of lowering the cost of housing.

Sharon Steel Combining Operations of 2 Plants

Sharon, Pa.

• • • **Sharon Steel Corp.** has combined operation of the Lowellville and Farrell plants under one management effective May 1, according to an announcement by Henry A. Roemer, Sharon president.

H. P. Rees, general works manager of Lowellville for the past 12 years, has been named general superintendent of the combined plants. William J. McGaffney has been named assistant general superintendent.

Mr. Roemer said the move was aimed at greater operating efficiency through coordinating the facilities. Farrell works has been Sharon's main steel plant, while Lowellville has been making alloys and special steels.

Mr. Roemer also announced that J. T. Bachman, assistant operating vice president for the past 4 years, will be transferred to the company's sales department. F. B. Quigley, general superintendent of Farrell Works, has been named consultant to the operating management.

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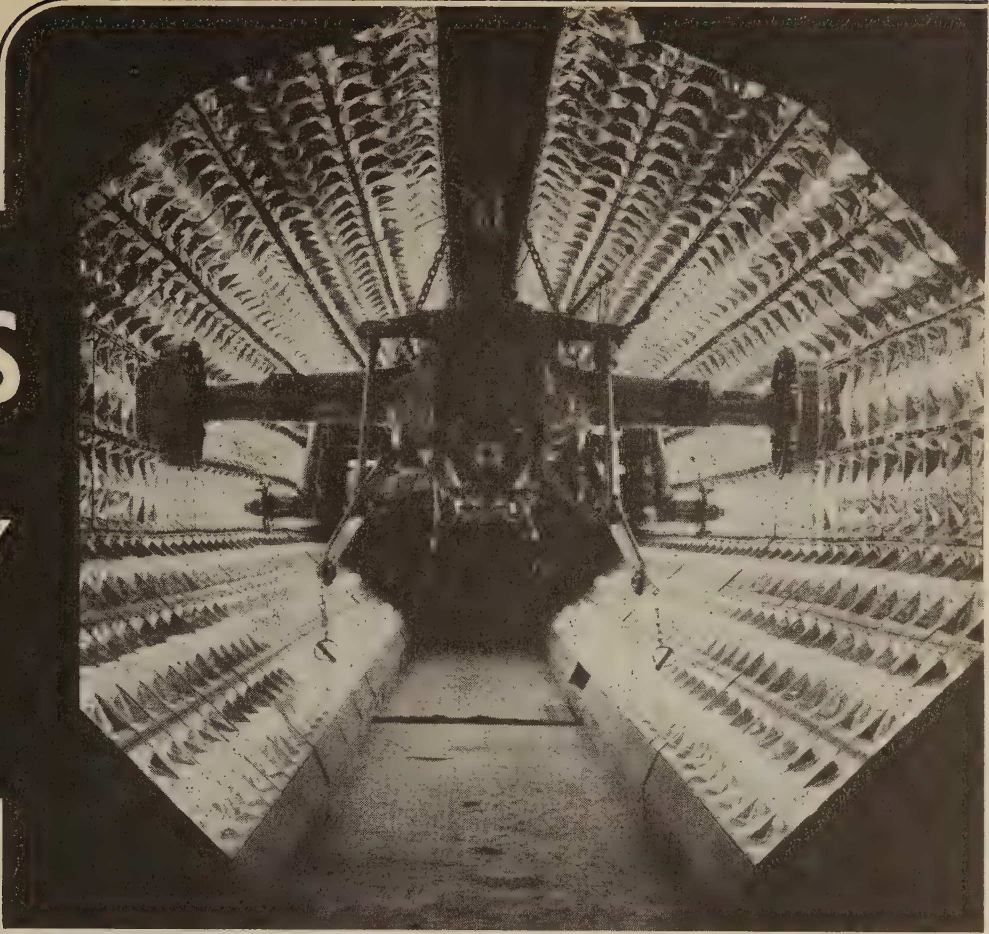

EVENRAY INSTALLATION AIDS STREAMLINED PRODUCTION. Harry Ferguson, Inc., Detroit, utilizes a 64-foot Fostoria Evenray paint baking oven with a capacity of 250 assemblies in eight hours—to keep pace with the new assembly plant's production basis of a completed farm tractor every 115 seconds.

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More than 6000 industrial users can testify to the superiority of Fostoria Evenray Infra-red Systems for finish baking and many other product heating operations. Fostoria's thorough knowledge of Infra-red applications . . . the painstaking research and pilot-testing of individual installations . . . the outstanding ability and leadership of Fostoria engineers—all combine to take full advantage of Infra-red's inherent time and money-saving efficiency. That's why Fostoria Evenray out-performs any other Infra-red equipment on the market today, *by actual test!* It *pays* to use the *best* in Infra-red. Request a Fostoria recommendation, today.

WRITE today, for free brochure describing the Infra-red process and Evenray advantages. Tell us your particular problem for our recommendation. No obligation.

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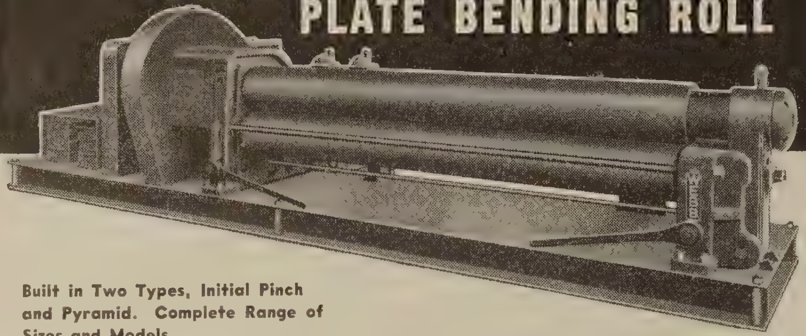

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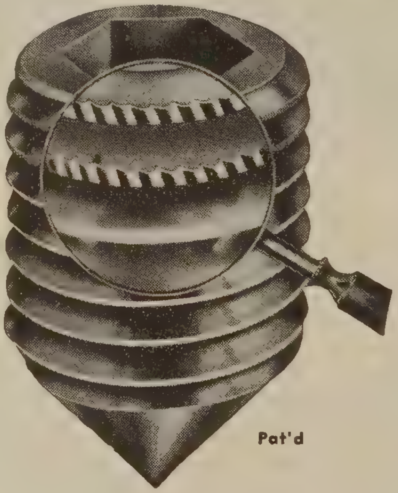

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United States in larger quantities than any other iron or steel product, the department reported. A total of 46,273 net tons was exported during February—a drop of approximately 7000 tons from the January figure. Nonalloy steel bars and 60-lb rail also were exported in large quantities.

Exports of iron and steel scrap dropped from 17,543 net tons in January to 14,468 net tons in February.

Net tonnages of all iron and steel products exported during February are:

Semifinished and Finished Products:	
Ingots, blooms, billets, slabs, sheet bars	12.234
Wire rods	3,426
Skelp	4,963
Iron bars	106
Concrete reinforcement bars	8,973
Steel bars, cold-finished	3,266
Other steel bars (excluding alloy)	28,578
Alloy steel bars	2,387
Welding rods, electric	1,526
Plates including boiler, not fab	21,560
Plates, fab., punched or shaped	2,789
Iron sheets, black	1,500
Steel sheets, black	37,305
Galvanized sheets	5,621
Strip steel, cold-rolled	5,661
Strip steel, hot-rolled	7,040
Tinplate	46,273
Terne plate	1,408
Structural shapes, plain	19,961
Structural shapes, fab.	16,728
Frames and sashes	374
Sheet piling	1,903
Rails, 60 lb per yd and over	25,498
Rails, less than 60 lb per yd	267
Rails, relaying	1,279
Splice bars and tie plates	3,145
Frogs and switches	1,821
Railroad spikes	293
Railroad bolts, nuts, and washers	71
Car and locomotive wheels, tires and axles	3,869
Seamless black pipe and tubes	2,266
Seamless casing and line pipe	22,540
Seamless boiler tubes	4,242
Welded black pipe	7,452
Welded galvanized pipe	4,904
Welded casing and line pipe	5,340
Welded boiler tubes	256
Other pipe and fittings	5,263
Plain wire	7,241
Galvanized wire	4,306
Barbed wire	5,264
Woven wire fencing	1,189
Woven wire screen cloth	428
Wire rope and strand	1,288
Wire nails	1,536
Other wire and manufactures	2,487
Tacks	183
Other nails, incl. staples and horseshoe nails	952
Bolts, nuts, rivets and washers, except railroad	2,788
Forgings	1,981
Horseshoes	12
TOTAL	351,741
Other Finished Products:	
Tanks, complete and knocked down	8,097
Metal lath	507
Tin and galvanized hollow ware	209
Tin cans, finished or unfinished	3,693
Malleable iron screwed pipe fittings	503
Cast iron screwed pipe fittings	76
Cast iron pressure pipe and fittings	2,387
Cast iron soil pipe and fittings	546
Iron castings and ingot molds	4,821
Steel castings	114
Sprocket and other power transmission chains	384
Other chains	622
TOTAL	21,959
Pig iron	2,383
Ferroalloys	1,308
TOTAL	3,691
GRAND TOTAL	377,391
Iron and steel scrap	14,468

University of Texas Acquires Surplus WAA Property at Austin

Washington

• • • **War Assets Administration** has approved transfer of the government-owned surplus International Minerals & Chemicals Corp. plant, Austin, Texas, which manufactured raw magnesium bar stock during the last war, to the University of Texas.

The property will be conveyed to the University at 100 pct public benefit allowance. Its present established fair value is $1,475,936. Included in the transfer are about 393 acres of land, 28 buildings of permanent and semi-permanent type together with electric, gas and other utilities.

WAA said that efforts to dispose of the facilities to industrial purchasers have been unsuccessful. The University of Texas has had possession since Sept. 21, 1946 under a 3-year lease utilizing the property for scientific research and educational purposes and proposes to continue to do so. WAA is advised that about 51 pct of the University's student body are veterans.

Acetylene Assn. Meets In Pittsburgh for Its Forty-ninth Session

Pittsburgh

• • • **The Morehead** Medal of the International Acetylene Assn. was awarded to Herman Van Fleet, Air Reduction Co., at the forty-ninth annual convention of the association held here recently at Hotel William Penn. Guests also heard half a dozen talks on practical applications of oxygen-acetylene for industrial use.

Herman Van Fleet

The medal, an annual award, was given Mr. Van Fleet in recognition of his leadership in production of oxygen and acetylene. Now vice-president and operating manager of Air Reduction, he has been associated with the company

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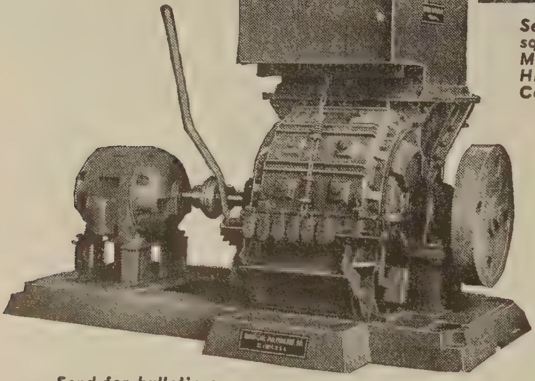

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since its incorporation, except for the World War I period.

Arthur J. Fausek, president, Modern Engineering Co., St. Louis, was elected president of the association at the business meeting. C. E. Monlux, vice-president, the Linde Air Products Co., was elected vice-president. E. V. David, assistant manager, technical sales division, Air Reduction Sales Co., was reelected treasurer. H. F. Reinhard continues as secretary.

Technical talks on the uses of oxy-acetylene in various shops were given by:

George Mersot, general foreman, Inland Steel Co., East Chicago; John T. Howat, president, Pittsburgh Metal Processing Co., Pittsburgh; F. H. Dill, welding engineer, American Bridge Co., Ambridge, Pa.; F. B. Rykoskey, supervisor of shops, Baltimore & Ohio RR, Baltimore; L. P. Elly, welding supervisor, Bethlehem Steel Co., Bethlehem; and O. O. Nelson, general foreman, Carnegie-Illinois Steel Corp., Homestead Works.

Blaw-Knox Net Rises

Camden, N. J.

• • • **Stockholders** of Blaw-Knox Co. at the annual meeting here were told that the company's earnings and shipments for the first quarter exceeded last year's first quarter performance.

The backlog of unfilled orders was reported as amounting to \$35.5 million at the close of the quarter, as compared to \$39 million at the close of 1948. The current backlog represents 51.7 pct of total 1948 billings.

Earnings for the 3 months ended Mar. 31, 1949, were reported as amounting to \$925,976, or 66¢ per share on 1,411,468 shares outstanding. This compares with a net profit of \$784,244, or 58¢ per share on 1,344,843 shares outstanding in the first quarter of 1948.

It was announced that the quarter's billings for shipments and services amounted to \$17,129,337, compared to \$13,750,273 for the same period of 1948. William P. Witherow, president, reported that the increased operations in the first quarter reflected greater availability and better receipts of steel and other materials used in the company's manufacturing work.

Predicts Gray Iron For Ductile Casting Field

Cleveland

• • • **Predicting** that nodular gray iron produced on a commercial basis will have a profound influence on the castings field, C. O. Burgess, technical director, Gray Iron Founders' Society, told a meeting of gray iron foundry executives of Connecticut that nodular iron will affect the quantity of normal gray iron produced as well as "permit gray iron to expand into the ductile casting field."

Reviewing further the society program on nodular gray irons, he said that the development of addition agents capable of producing nodular iron is proceeding rapidly, and that the Gray Iron Founders' Society is actively investigating methods of producing base irons capable of treatment with more than one type of nodulizing element.

Auto Maker Applies Pressure to Reduce Vendors Quotations

Detroit

• • • **The pressure is on** to obtain reduced quotations from the automobile industry's suppliers.

Typical of letters being sent to suppliers of the industry is the following letter which was recently sent out by a division of General Motors:

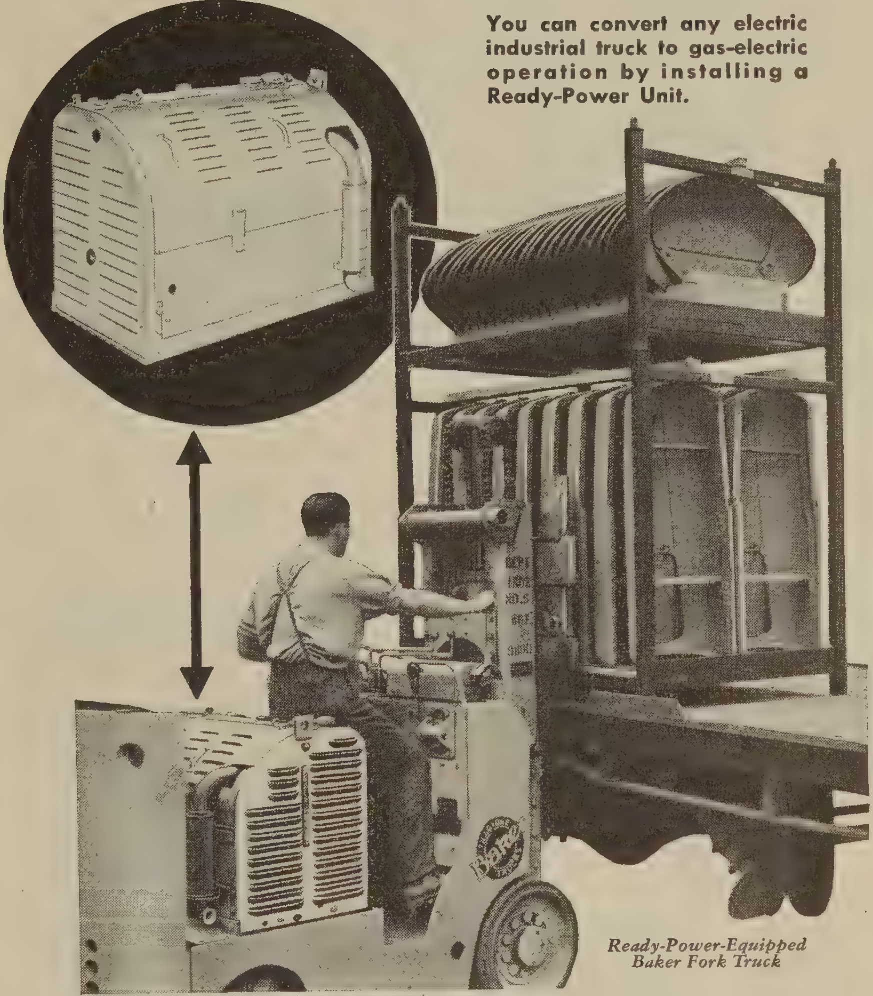
"Effective (a date is specified) this division substantially decreased the price of all current models. . . . This reduction is in anticipation of decreased material costs, as well as increased production and improved efficiency in our own plant.

"We ask that you kindly review your costs on all parts you are now furnishing us. We feel that after a thorough study is made of the costs now existing, it will be possible through lower material costs, increased quantities and improved efficiency in your plant, that you will be able to reduce prices to us.

"**As you know,** the sale of (our product) is now in a very competitive market and we find it necessary to do everything we can to

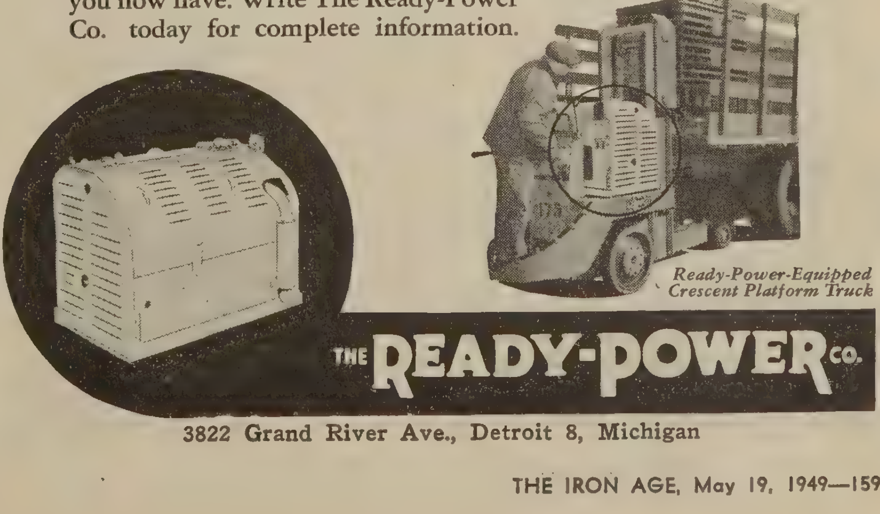
IT WILL PAY YOU TO CONVERT TO READY-POWER

You can convert any electric industrial truck to gas-electric operation by installing a Ready-Power Unit.



Ready-Power-Equipped Baker Fork Truck

Ready-Power gas-electric Power Units are unequalled for completely dependable power, hour after hour, day after day. A Ready-Power Unit will be installed by an electric truck manufacturer on any new truck you order . . . but you don't have to wait for that because you can convert any electric truck you now have. Write The Ready-Power Co. today for complete information.



Ready-Power-Equipped Crescent Platform Truck

THE READY-POWER CO.

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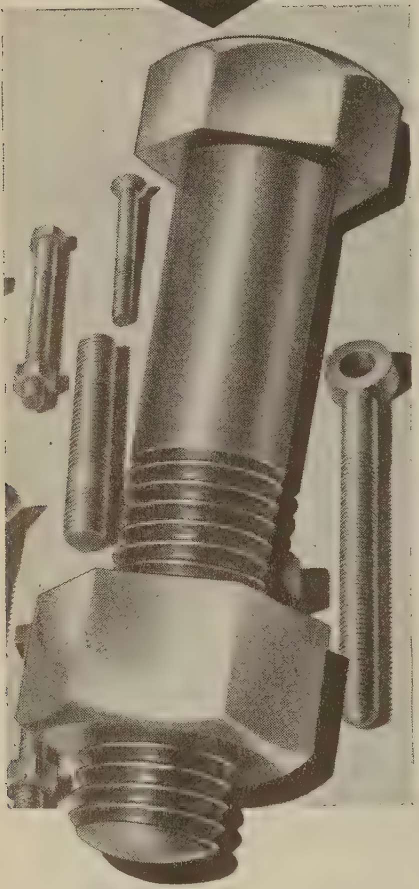

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reduce our costs to remain in a healthy competitive position.

"We will appreciate hearing from you promptly, advising cost changes on each part purchased by us and effective date of shipments at the reduced prices."

While some automotive purchasing agents report an encouraging response to such letters to suppliers, there are indications that some of the industry's suppliers are disturbed by the pressures being exerted on their pricing schedules. Several sources have indicated to THE IRON AGE that their prices have already been pared to the bone and further reductions are out of the question at this time.

Residential Building Gains in New England

Boston

• • • **Residential building** contracts in New England rose 40 pct in April over March and 14 pct over a year ago in April, the F. W. Dodge Corp. has reported. Total contracts awarded for the first 4 months were running 22 pct ahead of the same period in 1948 according to the company, a fact finding organization for the construction industry.

Non-residential volume fell off noticeably in April. It declined 7 pct from March and 45 pct from a year ago and 18 pct during the first 4 months. Public utility and public works contracts gained slightly over last month, but were 27 pct under last year.

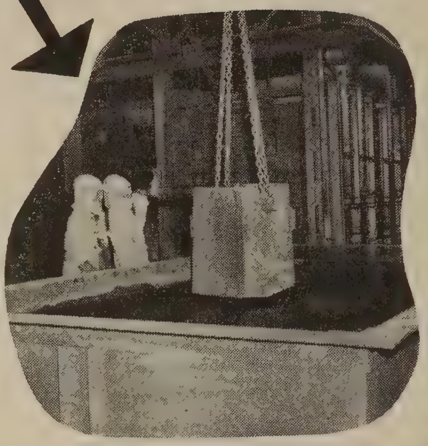
Ferguson Sales Jump

Detroit

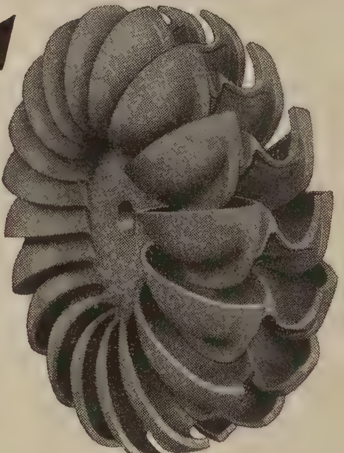
• • • **First quarter** sales by Harry Ferguson, Inc., Detroit manufacturer of tractors and farm implements were more than two and a half times those of the same period of 1948. Gross sales aggregated $14,096,699 compared with $5,600,632 a year ago.

The loss of the Ford tractor source forced Ferguson not only to find a new source of production but also to rebuild its distributor and dealer organization, according to a company official. Ferguson has filed suit against Ford Motor Co. for $251 million charging patent infringement and conspiracy to destroy the Ferguson company.

For Heat Treated
CASTINGS



For Intricate
CASTINGS



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Plants at:
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Utilities Have 100-Day Supply of Coal on Hand

Washington

• • • **Electric Utility** power plants consumed 7,629,014 tons of coal during March, 1949, a decrease of 6.2 pct from the 8,133,963 tons consumed during March a year ago, but 2.7 pct above coal consumption of the preceding month, according to the Federal Power Commission.

Of the March total coal consumption, 7,347,473 tons were bituminous and 281,541 tons were anthracite. Compared with the preceding month, use of bituminous coal increased 2.5 pct and anthracite increased 6.8 pct.

Stocks of coal on hand at electric utility power plants on Apr. 1, 1949, totaled 24,502,512 tons, 56.7 pct more than stocks a year ago, but 7.9 pct below stocks on hand Mar. 1, 1949. Of this total, bituminous coal comprised 22,126,514 tons and anthracite 2,375,998 tons. Based upon the March rate of consumption, coal stocks on hand at electric utility power plants on Apr. 1, 1949, were sufficient to last 100 days compared with the same number a month earlier and 60 days a year ago.

Gas use amounted to 35,689,- pct more than March 1948, use, pct more than March, 1948, use, and 16.2 pct above the consumption of a month earlier.

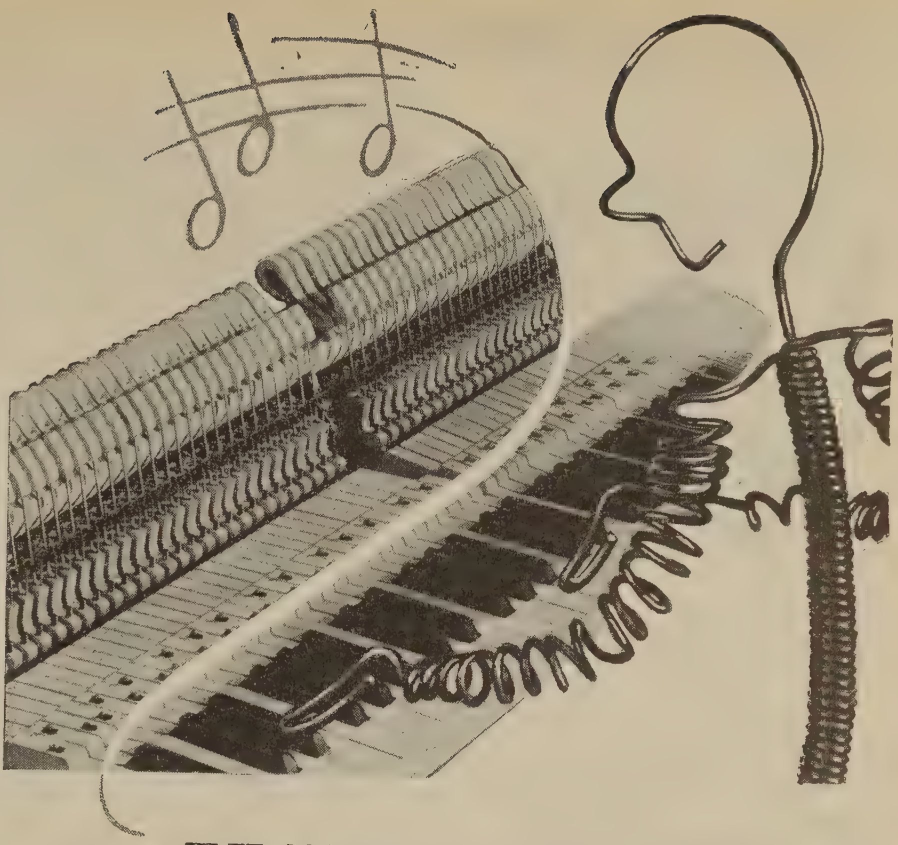
Fuel oil used during March totaled 4,615,063 barrels. This was the highest March fuel oil use of record and an increase of 8.4 pct compared with March 1948, use, but a decrease of 0.8 pct compared with the 4,650,816 barrels consumed the preceding month. Based upon March use, fuel oil stocks on hand Apr. 1, 1949, were sufficient to last 53 days compared with 47 days a month before and 46 days a year ago. Stocks totaled 7,825,938 barrels.

Canadian Imports Rise For Iron, Steel Products

Toronto

• • • **Canadian imports** of iron and steel and their products for the first 2 months this year totaled $142,900,000 compared with $126,600,000 for the like period last year.

Imports of rolling mill products, largely not available in Canada,



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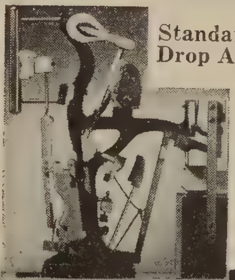

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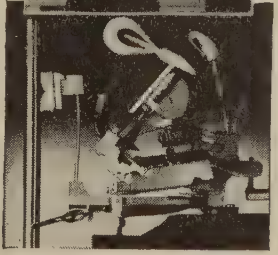

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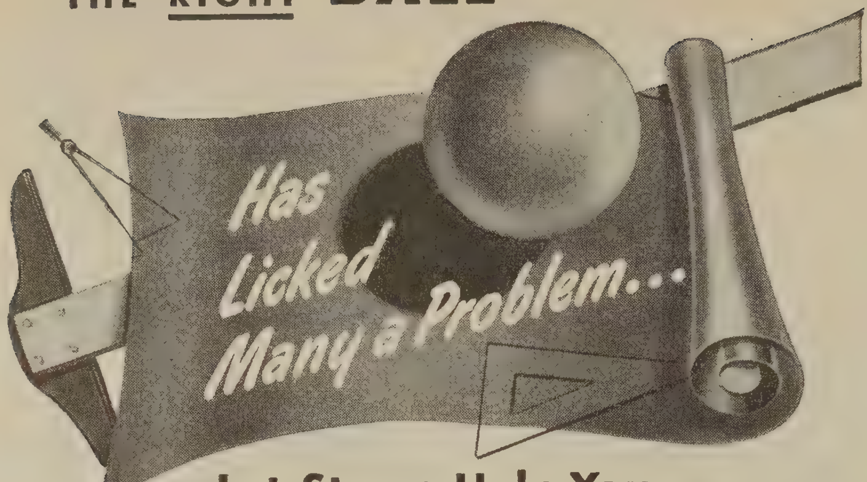
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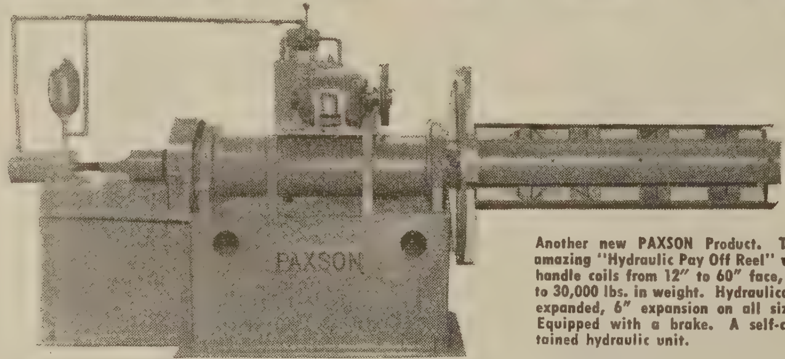

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jumped to $18,454,000 from $12,596,000 a year ago; freight and passenger automobiles, with some restrictions eased, were valued at $4,421,000 against $1,262,000 in the 1948 period; automobile parts, which have been allowed to come into Canada fairly freely to meet needs, totaled $19,052,000 compared with $17,397,000 a year ago; engines and boilers rose to 11,107,000 from 10,005,000 last year.

International Harvester Signs Pact With Union

Chicago

• • • **International** Harvester Co. and the United Farm Equipment and Metal Workers of America, CIO, on Apr. 29 reached an agreement to extend their present contracts until June 30, 1950. The farm equipment workers represent about 30,000 of Harvester's production, maintenance and salaried employees in 11 of the company's plants.

W. J. Reilly, labor relations manager for Harvester, said that the present contracts between Harvester and FE were scheduled to expire on June 30 of this year. The contract extension provides for:

(1) Negotiations on general wage rates upon request of either the company or the union at any time during the life of the contract.
(2) Provision for a permanent arbitrator to serve for the life of the contract.
(3) The extension of all other provisions of the present contract.

International Harvester officials believe that this settlement precludes any immediate labor trouble between the company and the farm equipment workers. For a month there has been a war between the UAW and the farm equipment workers both of which hold contracts with Harvester.

The UAW has been raiding the membership of the farm equipment workers. Early in June the company must renegotiate contracts for seven plants in which the UAW also has unions. Outside observers believe that the farm equipment workers have purposely established peace with International Harvester so that they can devote more time to the behind the scenes competition be-

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tween the rival unions.

W. J. Reilly announced he has come to an agreement with the union on the arbitrator who will be Ralph Seward of Pittsburgh. Mr. Seward is well known in arbitration circles and has served as permanent arbitrator for the UAW-CIO and General Motors and for U. S. Steel and United Steel Workers-CIO.

The Harvester plants covered by the recent agreement are McCormick, Tractor, West Pullman and McCormick Twine located in Chicago. Other plants also covered by the agreement are plants in Rock Falls, Rock Island (Farmall Works), Canton and East Moline, Ill.; Richmond, Ind.; Auburn, N. Y.; and Louisville, Ky.

Cleveland Employment Rate Continues Down

Cleveland

• • • **The slowly declining rate** of industrial production throughout Greater Cleveland, which has been in evidence since late in 1948, continued during April when the total employment of the 100 companies covered by the monthly survey of the Cleveland Chamber of Commerce declined 1.8 pct, according to J. W. Vanden Bosch, chamber analyst.

The April drop was a small one, as part of the decline was caused by the normal between-seasons slack period in the clothing industry, which is at an end by May 10 when production of fall and winter merchandise is in full swing, Mr. Vanden Bosch said.

"While the easier situation was rather widespread," he added, "comments from individual plants indicated that production of automobile parts continues at high levels.

"The average work week in April, 38.0 hr, compares with 38.9 hr in March and 40.8 hr at this time last year. A relatively small number of companies working less than 5 full days accounts for the small drop in the average working week.

"The outlook for May is for no great change. To offset the 11 plants which fear further layoffs, 8 expect increases and 45 will operate without change. As is to be expected at this time of year the average hiring rate for unskilled remains steady at $1.098.

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IN selecting cutting fluids, performance—not price—is the important factor. Savings pinched out in purchasing are often thrown out in the scrap pile. A large Milwaukee screw products company learned this in machining Type 304 stainless steel tube stock on a single spindle Cleveland Automatic, using Tantung high speed tools. Of several cutting fluids tried for this operation, D. A. Stuart's ThredKut 99 with paraffin oil was found to be the only one which would enable the shop to produce this job at a profit.

On the forming operation, ThredKut 99 permitted production of 500 to 600 pieces per grind, as compared to only 100 to 135 with other oils; on drilling 300 to 400 pieces with ThredKut 99, only 75 to 100 with other oils; and 22 pieces per hour average with ThredKut, only 8 with other oils!

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Predicts Operating Rate of 90 Pct For '49 Steel Industry

Canton, Ohio

• • • A "good year" is in store for the steel industry, despite the current business recession, Larry S. Hamaker, assistant general manager of sales, Republic Steel Corp., told the Canton and eastern Ohio association of Purchasing Agents here.

"Business won't be as good as in 1948, because we can't go on breaking records, but it will be better than in 1947," he said.

"The first quarter was the largest quarter the steel industry ever had in shipments," he said. "That doesn't look much like a depression."

Republic's second quarter, he said, won't be as large as the first quarter, but "it will be very high." According to Mr. Hamaker, the entire steel industry will be in balance before the end of the year and by the end of the third quarter, anyone who wants to buy steel can get it.

Commenting on recent cutbacks in alloy steel output in Canton, he said, "The alloy end of the business is over-correcting itself and is due for a comeback in the near future."

He predicted the steel industry would wind up the year with an average operating rate of 90 pct, adding that the steel industry is faced with the return of seasonal influences that haven't been felt for the past 9 years and a nationwide reduction of inventories. He said some steel customers are reducing their inventories to such an extent that they may be embarrassed by the end of the second quarter by inability to replace their stocks.

Michigan Employment Off

Lansing

• • • **March employment** in Michigan was off 1.2 pct from the February figure according to a recent report compiled by the Michigan Labor and Industry Dept.

However, the employment index for Wayne County increased from 75.9 in February to 76.5, the State Dept. said. Average weekly hours worked dropped from 39.9 in February to 37.2 in March. There was also a dip in wages from $68.59

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average for February, 1949, to $63.30 for March, 1949. These figures are based in reports from 414 Wayne County plants.

Employment figures compiled by the State showed that during the month of March employment in ship building was off 6.1 pct; agricultural machinery employment fell 9.3 pct and stoves and heating apparatus dropped 9.2 pct. Automobiles and parts, however, showed an increase of 1.0 pct in employment.

Retooling Program Cuts First Quarter Profits

Mount Vernon, Ohio

• • • **Gordon Lefebvre,** president Cooper-Bessemer Corp., reported sales of $7,036,000 for first quarter of 1949 compared with $7,781,000 for 1948. Both sales and net income were adversely affected by retooling of plants for production in volume of large 2500-hp gas engine compressors for which substantial orders have been received from natural gas pipe lines.

Balance of net profit transferred to surplus was $271,632 or 92¢ a share of common stock compared with $658,411 or $2.35 a year ago, reflecting heavy nonrecurring costs of retooling.

Apr. 1 backlog amounted to $19,228,000 compared with $14,655,000 on Jan. 1. Production is at a high level, and earnings are expected to be good for the year as a whole, Mr. Lefebvre stated.

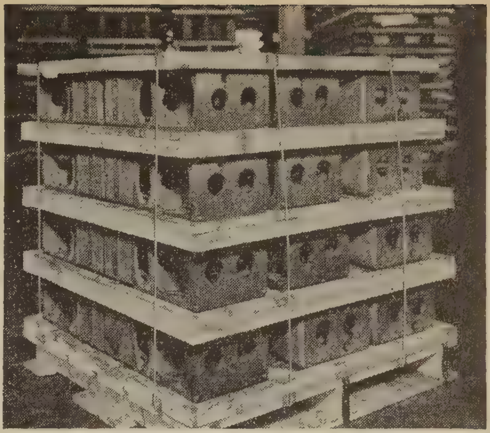
Employment Trend Down

Boston

• • • **Nearly half** of the total decline in factory employment in New England in March was in the textile industries. Manufacturing employment for the month dropped a total of 42,000 in the six states, and of this decline, 18,600 was in textile plants. These figures were recently made public by Wendell D. MacDonald, regional director of the U. S. Bureau of Labor Statistics.

The March report shows that nonmanufacturing employment remained quite stable with a total loss of only 1900 for the month. Of the 40,100 loss in manufacturing, 23,900 was in industries making non-durable goods, and 16,200 in durable goods.

Transmission cases securely bound to pallet with Gerrard 10 gauge Round Steel Straps. (Photo by International Harvester Co., Industrial Power Division.)→



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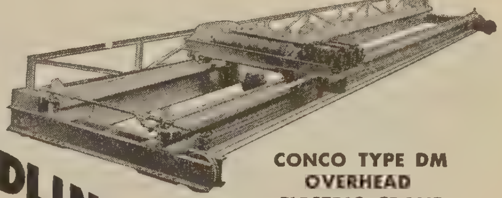

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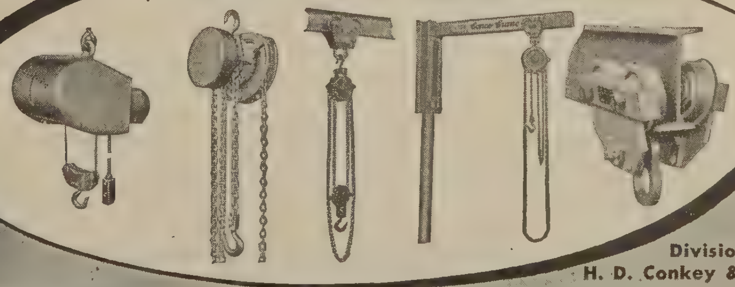

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Machine Tool Industry Hampered by Present Government Policy

Tax Depreciation Policies and Foreign Currency Troubles Discourage Industry

○ ○ ○

• • • **Present machine** tool equipment of the nation's metalworking plants is "utterly inadequate" to meet a war emergency, L. D. McDonald, president, National Machine Tool Builders' Assn., told the 47th annual spring meeting of NMBTA last week in Chicago.

Mr. McDonald, vice-president of Warner & Swasey Co., Cleveland, added that the JANMET reserve, originally created because of the realization, is being dissipated, while machine tool building companies are being shown "so-called phantom orders," indicating what they would be expected to produce immediately in case of emergency.

He said under present day circumstances, the machine tool industry could not fill such orders immediately, with current operations at 20 pct of the wartime peak.

Charging that the industry's domestic sales are being discouraged by the government's present tax depreciation policies and foreign sales hampered by currency difficulties and ECA entanglements, he added that "if our country tackled its peace problems the way it tackled its war problems, there would now be in Washington a Peace Production Board to stimulate the reequipment of metalworking plants with new and better machine tools.

"**We need a** healthy and virile machine tool industry capable of translating phantom orders for national defense into actual production schedules, instead of ghosts of what might have been.

"Instead, we have an industry right now cutting down production schedules and worried about cash reserves against the contingencies of the months ahead."

Mr. McDonald called for accelerated depreciation schedules with respect to machine tools and similar equipment, adding that such schedules "should take into consideration obsolescence as well as actual mechanical socalled useful life."

According to Mr. McDonald, the machine tool industry came out of the postwar period like a "hobbled horse."

In Detroit, the consensus seems to be that while the Ford strike has not had a noticeable effect on the machine tool market up to the present time, it "certainly hasn't helped any." A longterm effect of the strike that is being watched is the possible adverse influence on buying by small shops which, in the aggregate, account for a substantial volume of the Detroit machine tool business.

It is recognized that a loss in earnings may easily wash out any hope that exists today for retooling of some of Detroit's many small manufacturing plants and machine shops.

However, most Detroit sources today are looking intensively at the longterm outlook for the machine tool industry here which remains promising. It is pointed out, for example, that if only a small number of the quotations being furnished today on automatic transmissions could be translated into orders, a sizable volume of new business would thereby be created. Similarly, it is believed that within 2 or 3 years, all the General Motors Corp. divisions will be specifying high compression engines. A substantial amount of new tooling would be required for such a program, it is pointed out.

In the background, but becoming more insistent every day, is the possibility that developments in the U. S. economy may force a light car on Detroit auto manufacturers. Here again a substantial quantity of new tooling would be necessary, tooling that is over and above any plant improvement programs that may develop in the interim.

Detroit has hopes for extensive machine tool activity in the future, but at the moment it is not living very well on these hopes, regardless of how certain they may appear of future realization.

In Cleveland, it was reported this week that Automatic Steel Products, Inc., Canton, Ohio, has acquired Cleveland Tapping Machine Co., of Hartville. W. T. Harrison, president and general manager, will continue to direct operations at Hartville. A. M. Wickwire, president of Automatic Steel Products, Inc., has been named vice-president of Cleveland Tapping Machine and Curtis Franklin will be treasurer-secretary of both firms. Cleveland Tapping Machine Co. has been a leader in the development of semiautomatic and fully automatic machines for cutting precision screw threads in high production work.

Also in Cleveland, by common agreement of company and union, an injunction was granted limiting picketing at Warner & Swasey Co., strike-bound since Dec. 27. In settlement, counsel for both the company and District 54, International Assn. of Machinists, agreed that the union be allowed a total of 67 pickets plus one supervisory picket, whose job will be to see that the court order is not violated.

First Quarter Net Up

Cleveland

• • • **Lester M. Sears,** president, Towmotor Corp., reported first quarter earnings of $217,563. Mr. Sears said first quarter net topped that of corresponding period of 1948, despite lower sales volume. First quarter 1948 earnings were $208,720.

Total net for all of last year was $903,285. Cost economies and a price increase last fall on the company's line of lift trucks accounted for the profit showing, although sales were off 15 pct from the first quarter of 1948.

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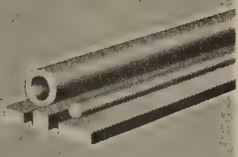
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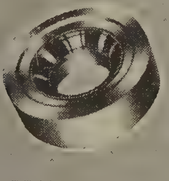
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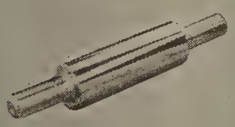
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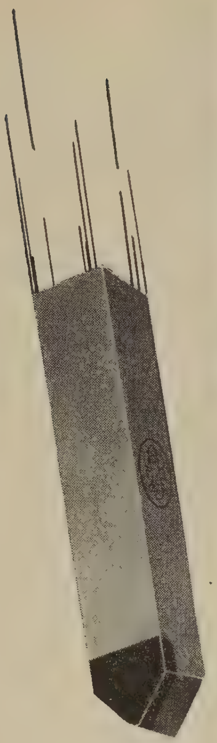

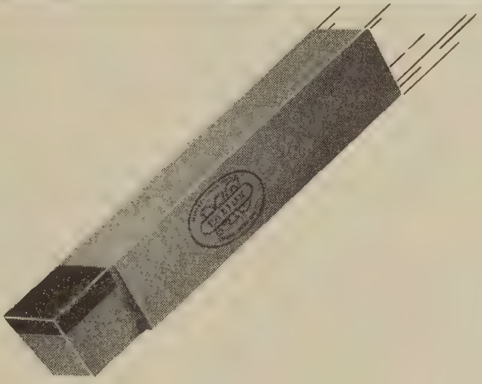

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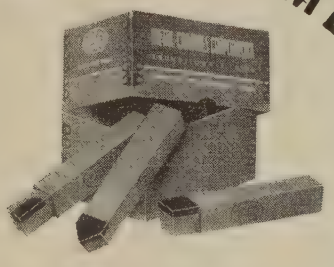

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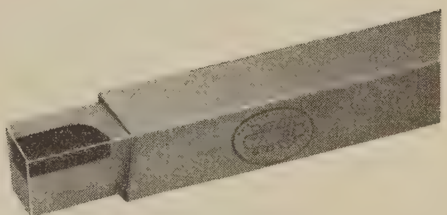

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NONFERROUS METALS

. . . News and Market Activities

Some Strengthening Factors Seen at Work In Metal Markets

Copper Scrap Shows Strength As Custom Smelters Boost Buying Price 2¢ per lb

New York

• • • **For the first** time in months, there were strengthening factors at work last week and early this week in the metal markets. But at the same time there were additional reductions put into effect on some products.

Custom smelters raised the buying prices for copper scrap grades by a total of 1¢ per lb last Friday. An advance of ½¢ was made in the morning, and a further advance of the same amount was made in the afternoon. On Monday, there was an advance of another 1¢ on No. 1 and ½¢ on other grades. This placed the price of No. 1 copper at 15.00¢, No. 2 at 13.50¢, and light copper at 12.50¢. This bears out the predictions of many industry members that tonnages of scrap could not be bought at previous quotations. The development equalizes the price of copper scrap with primary metal with a differential of 3¢ for refining. This marks the first time in months that scrap and primary metals prices are going at their proper relationship.

Following this development, one ingot producer raised his prices by ¼¢ per lb on all grades except yellow ingot. Dealers raised their scrap buying prices, but not to the full extent represented by the refinery increase, as they are still cautious on the rise. Dealers are checking frequently with refineries on quotations. As in any rising market, the refineries have found that scrap is very slow to come out, the dealers preferring to wait to see how the market will stabilize. The 15.00¢ buying price has not yet placed refineries on an equal footing with brass mills whose new prices set copper scrap at 15.50¢. If anything, the refineries are more particular than the mills on No. 1 copper shipments.

Early this week, price spreads in copper and lead were still in effect although in the present state of the markets, little copper and no lead was being sold above the minimum prices. Fabricating subsidiaries of the high priced copper sellers were meeting the competitive market level, indicating that metal is being sold on the average price basis. This is also true of the lead market.

The zinc market shows signs of activity in buying by galvanizers. There is also a small volume of export demand. Lead activity is confined to carload orders for immediate delivery. There is nothing now to indicate the probability of an early improvement in demand except the growing activity of the secondary lead market.

Aluminum ingot producers reduced their prices by ½¢ to 1¢ per lb, bringing prices of comparable grades below the level of virgin ingot. Ingot buying by nonferrous foundries continued at a standstill.

A strengthening factor in the lead market developed when smelters reduced their smelting charge for battery plates to $80 a ton. This served to advance the dealers' buying price for battery plates by ½¢ per lb.

All brass mills have now taken action to reduce their prices for mill products to the 18.00¢ level for copper. In addition reductions were announced last week in copper wire and cable prices. The brass mills report that there has been some small pickup in their orders since the advent of the 18.00¢ copper price. The change is not yet significant, but it indicates either that consumers feel that the price is now at a stable level for the time being, or that consumers' inventories are reduced to the point that they must reenter the market. Another factor in the situation is the possibility of a renewed strike at Kennecott's Bingham Canyon, Utah, mine. There is no further development to report on this as the fact finding committee is still negotiating with union and management. It is significant that brass mills report that their order schedules are based on approximately four times the number of consumers for the equivalent volume of business. This would indicate that a large number of consumers are reaching the point that small quantity reordering must begin.

Meanwhile, consumers continue to trim inventories. What buying there is can best be termed spotty. Of special significance is the number of small orders. Some firms which can no longer safely reduce inventories apparently are buying in small quantities in order to take full advantage of any possible future price reductions.

Nonferrous Metals Prices

	May 11	May 12	May 13	May 14	May 16	May 17
Copper, electro, Conn.	18.00– 18.50	18.00– 18.50	18.00– 18.50	18.00– 18.50	18.00– 18.50	18.00– 18.50
Copper, Lake, Conn.	18.625	18.625	18.625	18.625	18.625	18.625
Tin, Grade A, New York	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03
Zinc, East St. Louis	12.00	12.00	12.00	12.00	12.00	12.00
Lead, St. Louis	13.85	13.85	13.85	13.85	13.85	13.85

Note: Quotations are going prices.

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	38.50
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$52.00
Bismuth, ton lots	$2.00
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$1.80 to $1.87
Copper, electro, Conn. Valley	18.00 to 20.00
Copper, lake, Conn. Valley	18.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$100 to $110
Lead, St. Louis	13.85 to 14.80
Lead, New York	14.00 to 15.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, carlots	34.50
Mercury, dollars per 76-lb flask, f.o.b. New York	$82 to $84
Nickel, electro, f.o.b. New York	42.93
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$72 to $75
Silver, New York, cents per oz.	71.50
Tin, Grade A, New York	$1.03
Zinc, East St. Louis	12.00
Zinc, New York	12.70
Zirconium copper, 10-12 pct Zr, per lb contained Zr	$12.00

Remelted Metals

Brass Ingot

(Published prices, cents per lb delivered, carloads)

85-5-5-5 ingot		
No. 115	15.50*	17.00
No. 120	15.00*	16.50
No. 123	14.50*	16.00
80-10-10 ingot		
No. 305	....	21.75
No. 315	....	18.75
88-10-2 ingot		
No. 210	....	28.50
No. 215	....	25.50
No. 245	18.25*	20.25
Yellow ingot		
No. 405	13.00*	14.50
Manganese bronze		
No. 421	....	19.50

* F.o.b. Philadelphia.

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	19.50-20.00
0.60 copper, max.	19.00-19.50
Piston alloys (No. 122 type)	17.00-17.50
No. 12 alum. (No. 2 grade)	16.00-16.50
108 alloy	16.50-16.75
195 alloy	17.50-18.00
13 alloy	19.00-19.50
AXS-679	16.50-17.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95 pct-95½ pct	16.25-16.50
Grade 2—92 pct-95 pct	15.25-15.50
Grade 3—90 pct-92 pct	14.25-14.50
Grade 4—85 pct-90 pct	13.50-14.00

Electroplating Supplies

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	38⅛
Electrodeposited	32⅝
Rolled, oval, straight, delivered	31.84
Ball anodes	36⅜
Brass, 80-20	
Cast, oval, 15 in. or longer	33⅞
Zinc, oval, 99.886, f.o.b. Detroit	22½
Ball anodes	20½
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	60.00
Cadmium	$2.15
Silver 999 fine, rolled, 100 oz. lots, per troy oz, f.o.b. Bridgeport, Conn.	79

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	48.00
Copper sulfate, 99.5 crystals, bbls.	9.10
Nickel salts, single or double, 4-100 lb bags, frt. allowed	18.00
Nickel chloride, 300 lb bbl.	24.50
Silver cyanide, 100 oz. lots, per oz.	59
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc sulfate, crystals, 22.5 pct, bags	6.75
Zinc sulfate, 25 pct, flakes, bbls.	7.75

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4, 35.1¢ to 66¢; 11 to 13, 36.1¢ to 78¢; 23 to 25, 38.2¢ to $1.07; 35 to 37, 45.7¢ to $1.65; 47 to 49, 67.5¢ to $2.41.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3.5 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ⅛ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅜ to 2 in., R317-T4, 37.5¢ to 34.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2⅛ to 3⅜ in., R317-T4, 33.5¢ to 32.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheet and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam. in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangles: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb. per ft, per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢; 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢. 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and shapes		
Hot-rolled	56	45
Cold-drawn	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per pound, freight prepaid on 200 lb)

	Sheets	Rods	Extruded Shapes
Copper	31.68	....	31.28
Copper, hot-rolled	....	27.53	....
Copper, drawn	....	28.78	....
Low brass	30.17	29.86	33.08*
Yellow brass	29.10	28.79	32.11*
Red brass	30.51	30.20	33.42*
Naval brass	34.15	28.21	29.46
Leaded brass	....	23.69	27.89
Commercial bronze	31.38	31.07	34.04*
Manganese bronze	37.65	31.55	33.05
Phosphor bronze, 5 pct	50.82	51.07	....
Muntz metal	32.18	27.74	28.99
Everdur, Herculoy, Olympic, etc.	36.55	35.47	....
Nickel silver, 10 pct	39.83	42.24	42.41
Architectural bronze	....	....	27.89

*Seamless tubing

Scrap Metals

Brass Mill Scrap

(Cents per pound; add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	15½	14¾
Yellow brass	13¼	12½
Red brass	14⅜	13⅝
Commercial bronze	14½	13¾
Manganese bronze	13⅛	12¼
Leaded brass rod ends	13	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	15.00
No. 2 copper, wire	13.50
Light copper	12.50
Refinery brass	12.00*
Radiators	8.00

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper, wire	15.00
No. 2 copper, wire	13.50
Light copper	12.50
No. 1 composition	10.00
No. 1 comp. turnings	9.50
Rolled brass	8.75
Brass pipe	9.00
Radiators	8.00
Heavy yellow brass	7.50
Aluminum	
Mixed old cast	8.50
Mixed old clips	8.50
Mixed turnings, dry	7.00
Pots and pans	8.50
Low copper	12.00

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	12½—13
No. 2 heavy copper and wire	11—11½
Light copper	10—10½
Auto radiators (unsweated)	7—7½
No. 1 composition	8½—9
No. 1 composition turnings	8¼—8¾
Clean red car boxes	7½—7¾
Cocks and faucets	7½—8
Mixed heavy yellow brass	6½—7
Old rolled brass	7—7½
Brass pipe	8—8¼
New soft brass clippings	10½—11
Brass rod ends	7—7½
No. 1 brass rod turnings	6—6½

Aluminum

Alum. pistons and struts	4—4¼
Aluminum crankcases	6—6½
2S aluminum clippings	10—10½
Old sheet and utensils	6—6½
Borings and turnings	3—3½
Misc. cast aluminum	6—6½
Dural Clips (24S)	6—6½

Zinc

New zinc clippings	6—6½
Old zinc	4½—5
Zinc routings	3½—3¾
Old die cast scrap	—3

Nickel and Monel

Pure nickel clippings	17—18
Clean nickel turnings	15—16
Nickel anodes	17—18
Nickel rod ends	17—18
New Monel clippings	13½—14½
Clean Monel turnings	8—9
Old sheet Monel	10—11
Old Monel castings	8—9
Inconel clippings	11—12
Nickel silver clippings, mixed	6½—7½
Nickel silver turnings, mixed	6—6½

Lead

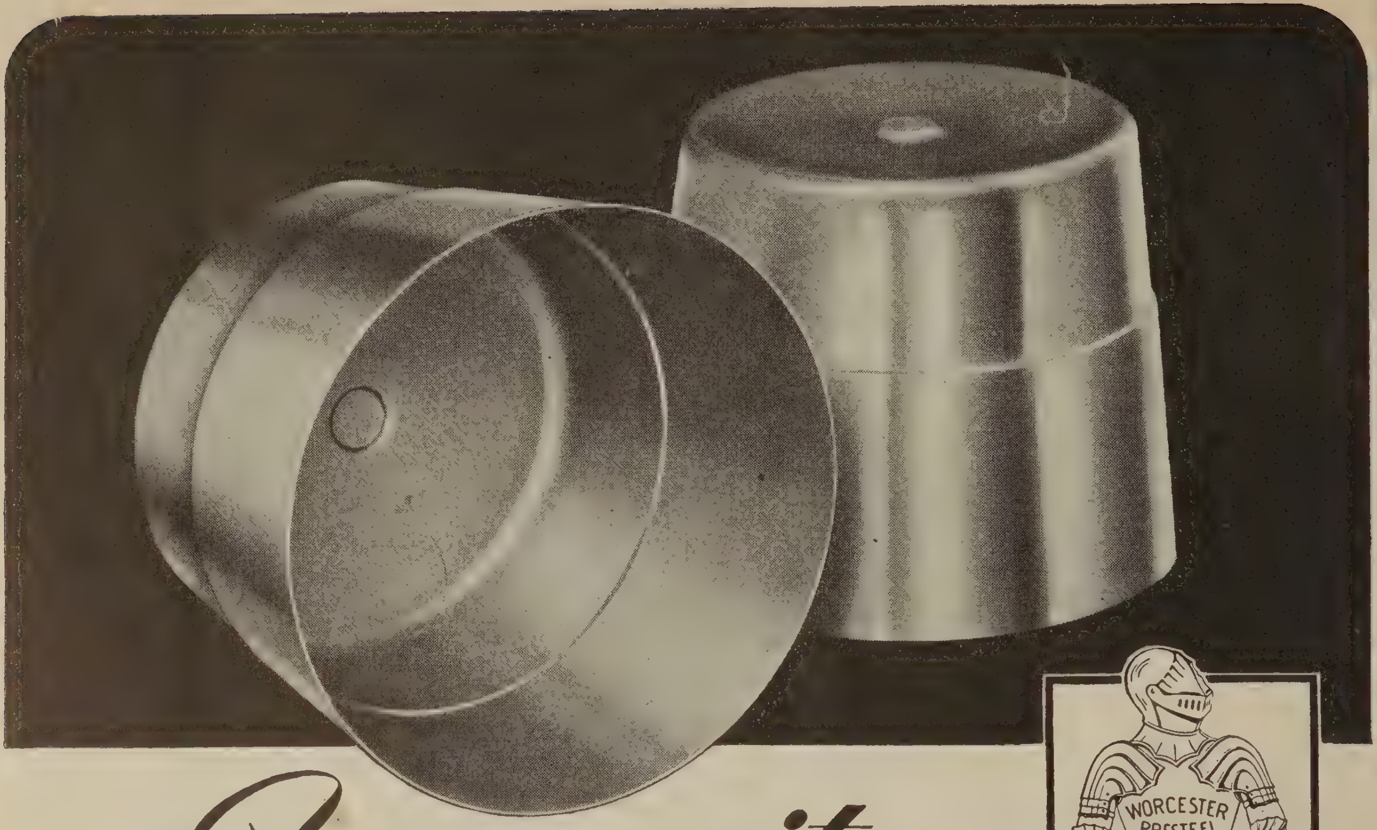
Soft scrap lead	8—8½
Battery plates (dry)	4½—5

Magnesium Alloys

Segregated solids	8—9
Castings	4½—5½

Miscellaneous

Block tin	70—72
No. 1 pewter	47—49
No. 1 auto babbitt	40—42
Mixed common babbitt	9½—10
Solder joints	14—15
Siphon tops	45—47
Small foundry type	11½—12
Monotype	10½—11
Lino. and stereotype	10—10½
Electrotype	7½—8
New type shell cuttings	9¼—9½
Hand picked type shells	4½—5
Lino. and stereo. dross	6½—7
Electro. dross	4—4½



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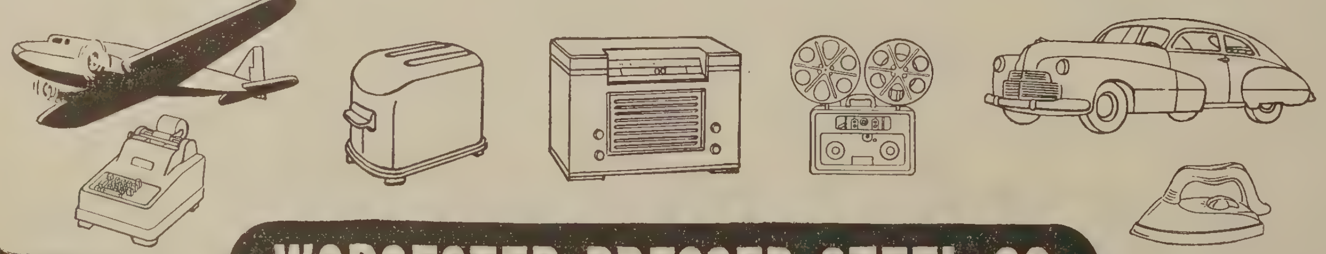

WORCESTER PRESSED STEEL CO.

405 BARBER AVENUE
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Lack of Interest Characterizes Market

New York

• • • Scrap prices showed the same uncertainty as in previous weeks. There were light purchases in all areas, either at last week's quotations or somewhat lower. Mills and foundries were still out of the market and, according to some sources, it may be months before any real interest will be shown.

THE IRON AGE scrap composite remained unchanged from last week's figure of $22.75 per gross ton. Prices for No. 1 heavy melting steel this week are: Pittsburgh, $22.50 to $23; Chicago, $23 to $24; and Philadelphia, $21.50 to $22.50.

Consumers still have not shown any real interest to buy at today's prices. They are also becoming selective in regard to quality in the acceptance of material that is being shipped.

With some observers predicting still lower prices it will take a few more weeks, or probably months, to define the real trend. Many brokers claim that it would be impossible to fill orders for substantial tonnages of material at today's prices. Some dealers are piling scrap and have been doing so for some time, whereas others are not interested, showing dealer resistance to the present low prices.

Large importations of German scrap will end during the next several months. After that imports will probably be negligible. How this will influence the market cannot be predicted at present, since this scrap alleviated a shortage that existed until about 6 months ago.

Meanwhile, scrap consumers apparently fear no recurrence of the postwar scrap shortage. Or if they do, they have decided to deal with it if and when it comes. Orders are scarce. And when they are forthcoming, some of them are so small as to be little more than tokens.

•

PITTSBURGH—This has probably been about the dullest week of the year in the scrap market here and there is nothing in sight pointing to any possible activity. Railroad specialties went at various prices on the last list but what is a very substantial tonnage for these times was sold at $27.50 a ton plus commission, leaving these items unchanged for the week. Railroad heavy melting was also unchanged; none of the higher priced material was sold here. Slight declines were posted in rails, mixed borings and machine shop turnings and heavy breakable cast and malleable. Major consumers of all grades are still out of the market and probably won't come in until next month, if then.

•

CHICAGO—After about one week of relatively fair trading, particularly in turnings and borings, the market again became dead last week. So far new orders have not appeared. Present buying is for a car at a time at the full spread of prices shown in this week's issue. The mills are not taking all the scrap offered by the railroads or their customers. Some observers are predicting lower prices within a few weeks. Currently the market shows no strength anywhere along the line.

•

PHILADELPHIA—The market is still largely inactive so far as steel grades are concerned. The cast market is firm. Buying by one consumer at $29 upset the cast market for a time and made it impossible for other consumers to buy at the quoted price of $28. This business is ended. Turnings grades are down by $1 a ton due to apathy by consumers. A consumer of shovelings is back in the market buying at $1 less. Consumers of low phos. have been out of the market, but brokers are buying at lower prices. The market is quoted $1 lower. Railroad specialties are inactive but an appraisal of the market indicates they should be quoted $3 lower. Mills in this area are taking off furnaces. Dealers are piling scrap. Turnings are being moved because of the fire hazard. Dealers estimate that the current volume is running only 30 to 40 pct of 1948.

•

CLEVELAND—Blast furnace grades were strong at quoted prices here this week, as consumers continued to move to meet the possible requirements of a coal strike. Other mill grades appeared to be either holding, or a little on the weak side, particularly dealer grades. On the other hand, very little tonnage is moving into dealers' yards at present prices. A limited revival of foundry interest was reported, but the question is: Are foundries planning to buy or simply feeling out the market? Railroad cast is showing some strength and foundry inventories are generally pretty low. Curious aspect of the market is that with all the weakness, actual and alleged, in scrap and with brokers looking for orders, a big order would require very careful handling to cover at present prices or a few dollars higher.

•

CINCINNATI—Mills are taking token tonnages of No. 1 and No. 2 steel in an otherwise quiet market. Some blast furnace material is moving which is largely anticipatory tonnage for possible coal strike requirements rather than an indication of current need. Foundries are taking a little material, but demand for these grades continues substantially down.

•

DETROIT—With the exception of No. 1 bundles and low phos. plate, most steel grades at Detroit are slightly lower than the prices quoted a week ago. Even at today's low prices, however, the volume of scrap moving is low and some sources have reported a decline in volume of 60 pct since Jan. 1. The Ford strike, if continued, is expected to accelerate this trend. A bright spot in the picture is the report that dealer resistance to the present low prices seems to be developing in some segments of the market.

•

NEW YORK—The market again remains inactive with no new commitments for the present or future. Prices represent an appraisal of the market since there is insufficient actual business to indicate any general trend. Consumers still have not indicated when they would again enter the market on a large scale. Some carload orders are being replaced by a truckload or two, and in some instances by no order whatsoever.

•

ST. LOUIS—The scrap iron market seems to have leveled off, with no price changes during the week in the St. Louis industrial district. It is believed that prices will remain as they are for the present. There was no buying by the mills or foundries. Shipments are off as a result of the recent sharp declines.

•

BOSTON—Prices are holding about the same, but there is little or no business. No. 1 heavy melting steel is about $14.25 to $14.50, just a bit firmer. Other categories haven't changed and scrap is still very unsettled with dealers refusing to quote prices. Some brokers say that they have no market for machine shop turnings which is down to $5.50 to $6.00.

•

BIRMINGHAM—This district has yet to show any pickup in scrap activity. Republic Steel bought some material the first part of May but has withdrawn from the market. Considerable scrap is being offered by railroads serving this area but receipts at dealers yards remain very light.

•

BUFFALO—This area resisted last week's main drop in the openhearth grades. In general, things were quiet and there was only a small amount of material moved. Republic's closing of 2 openhearth furnaces will not help the local scrap situation. Foundries have been operating at a low rate and have bought almost no scrap during the week. Some interest has been shown in shoveling turnings when compared with the rest of the list.

IRON AND STEEL SCRAP PRICES

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$22.50 to $23.00
R.R. hvy. melting	24.50 to 25.00
No. 2 hvy. melting	20.50 to 21.00
No. 2 bundles	18.50 to 19.00
RR. scrap rails	26.50 to 27.00
Rails 2 ft and under	32.00 to 32.50
No. 1 comp'd bundles	22.50 to 23.00
Hand bdld. new shts.	20.50 to 21.00
Hvy. steel forge turn	20.50 to 21.00
Mach. shop turn.	15.50 to 16.00
Shoveling turn.	18.00 to 18.50
Mixed bor. and ms. turn.	15.00 to 15.50
Cast iron borings	18.00 to 18.50
No. 1 mach. cast.	27.50 to 28.00
Mixed yard cast.	22.00 to 22.50
Hvy. breakable cast.	22.50 to 23.00
Malleable	27.50 to 28.00
RR. knuck. and coup.	27.50 to 28.00
RR. coil springs	27.50 to 28.00
RR. leaf springs	27.50 to 28.00
Rolled steel wheels	27.50 to 28.00
Low phos.	25.00 to 25.50

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$23.00 to $24.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 bundles	23.00 to 24.00
No. 2 dealers' bundles	19.00 to 20.00
Mach. shop turn.	12.00 to 13.00
Short shov. turn.	15.00 to 16.00
Cast iron borings	14.00 to 15.00
Mix. borings and turn.	13.00 to 14.00
Low phos. hvy. forge	27.00 to 28.00
Low phos. Plates	24.00 to 26.50
No. 1 RR. hvy. melt	25.00 to 25.75
Rerolling rails	28.00 to 30.00
Miscellaneous rails	26.50 to 27.50
Angles & splice bars	28.00 to 29.00
Locomotive tires, cut	31.00 to 32.00
Cut bolster & side frames	31.00 to 32.00
Standard stl. car axles	29.00 to 30.00
No. 3 steel wheels	26.00 to 27.00
Couplers and knuckles	26.00 to 27.00
Rails, 2 ft and under	31.00 to 32.00
Malleable	24.00 to 26.00
No. 1 mach. cast	27.00 to 29.00
No. 1 agricul. cast.	25.00 to 26.00
Heavy breakable cast.	22.00 to 23.50
RR. grate bars	18.00 to 19.00
Cast iron brake shoes	19.00 to 20.00
Cast iron car wheels	28.00 to 29.00

CINCINNATI

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$20.00 to $21.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 bundles	19.00 to 20.00
No. 2 bundles	17.00 to 18.00
Mach. shop turn.	9.00 to 10.00
Shoveling turn.	10.00 to 11.00
Cast iron borings	10.00 to 11.00
Mixed bor. & turn.	9.00 to 10.00
Low phos. 18 in. under	26.00 to 27.00
No. 1 cupola cast.	27.00 to 28.00
Hvy. breakable cast.	19.00 to 20.00
Rails 18 in. and under	32.00 to 32.50
Rails random length	22.00 to 23.00
Drop broken	30.00 to 31.00

BOSTON

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$14.25 to $14.50
No. 2 hvy. melting	12.50
No. 1 bundles	13.50 to 14.50
No. 2 bundles	12.00 to 12.50
Bushelings	12.00 to 12.50
Shoveling turn.	9.50 to 10.00
Machine shop turn.	5.50 to 6.00
Mixed bor. and turn.	5.50 to 6.00
Cl'n cast chem. bor.	11.00 to 13.00
No. 1 machinery cast.	27.00 to 32.00
No. 2 machinery cast.	24.00 to 26.00
Heavy breakable cast.	17.00 to 20.00
Stove plate	20.50 to 21.50

DETROIT

Per gross ton, brokers' buying prices f.o.b. cars:

No. 1 hvy. melting	$15.50 to $16.00
No. 2 hvy. melting	13.00 to 13.50
No. 1 bundles	16.50 to 17.00
New busheling	15.50 to 16.00
Flashings	15.50 to 16.00
Mach. shop turn.	9.50 to 10.00
Shoveling turn.	10.50 to 11.00
Cast iron borings	10.50 to 11.00
Mixed bor. & turn.	9.50 to 10.00
Low phos. plate	16.50 to 17.00
Heavy breakable cast.	13.00 to 17.00
Stove plate	16.00 to 17.00
Automotive cast.	22.00 to 24.00
No. 1 cupola cast.	19.00 to 23.00

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$21.50 to $22.50
No. 2 hvy. melting	19.00 to 20.00
No. 1 bundles	21.50 to 22.50
No. 2 bundles	17.00 to 18.00
Mach. shop turn.	12.00 to 13.00
Shoveling turn.	15.00 to 16.00
Mixed bor. and turn.	11.00 to 12.00
Clean cast chemical bor.	21.00 to 22.00
No. 1 machinery cast	27.00 to 29.00
No. 1 mixed yard cast	25.00 to 27.00
Hvy. breakable cast.	27.00 to 28.00
Hvy. axle forge turn.	20.00 to 21.00
Low phos. acid openhearth	24.00 to 25.00
Low phos. electric furnace	26.00 to 27.00
Low phos. bundles	23.00 to 24.00
RR. steel wheels	26.00 to 27.00
RR. coil springs	26.00 to 27.00
RR. malleable	24.00 to 28.00
Cast iron carwheels	29.00 to 30.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$21.00 to $22.00
No. 2 hvy. melting	19.00 to 20.00
No. 2 bundled sheets	19.00 to 20.00
Mach. shop turn.	13.00 to 14.00
Shoveling turnings	13.00 to 14.00
Locomotive tires, uncut	23.00 to 24.00
Mis. std. sec. rails	22.00 to 23.00
Steel angle bars	26.00 to 27.00
Rails 3 ft and under	29.00 to 30.00
RR. steel springs	24.00 to 25.00
Steel car axles	25.00 to 27.00
Brake shoes	21.00 to 22.00
Malleable	23.00 to 24.00
Cast iron car wheels	26.00 to 28.00
No. 1 machinery cast	29.00 to 30.00
Hvy. breakable cast.	19.00 to 20.00
Stove plate	22.00 to 23.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy melting	$20.00
No. 2 hvy. melting	20.00
No. 2 bundles	18.00
No. 1 busheling	20.00
Long turnings	14.00
Shoveling turnings	17.00
Cast iron borings	17.00
Bar crops and plate	$24.00 to 25.00
Structural and plate	24.00 to 25.00
No. 1 cupola cast.	27.00 to 28.00
Stove Plate	24.00 to 25.00
No. 1 RR. hvy. melt.	22.00 to 23.00
Steel axles	26.00 to 27.00
Scrap rails	23.00
Rerolling rails	27.00
Angles & splice bars	24.00 to 25.00
Rails 2 ft & under	25.00 to 26.00
Cast iron carwheels	29.00 to 30.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$23.50 to $24.00
No. 2 hvy. melting	20.50 to 21.00
No. 1 bundles	23.50 to 24.00
No. 2 bundles	19.00 to 19.50
Mach. shop turn.	13.50 to 14.00
Short shov. turn.	18.50 to 19.00
Cast iron borings	18.50 to 19.00
Low phos.	24.50 to 25.00

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$15.00 to $16.00
No. 2 hvy. melting	13.00 to 14.00
No. 2 bundles	12.00 to 13.00
Mach. shop turn	7.50 to 8.00
Mixed bor. turn.	7.50 to 8.00
Shoveling turnings	9.50 to 10.00
Machinery cast.	22.00 to 23.00
Mixed yard cast.	20.00 to 21.00
Heavy breakable cast.	20.00 to 21.00
Charging box cast	20.00 to 21.00
Unstrp. motor blks.	16.00 to 17.00
Cl'n cast chem. bor.	12.00 to 14.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$22.50 to $23.50
No. 2 hvy. melting	19.50 to 20.00
No. 1 bundles	19.50 to 20.00
No. 2 bundles	17.50 to 18.00
No. 1 busheling	19.50 to 20.00
Mach. shop turn.	12.00 to 13.00
Shoveling turn.	16.50 to 17.00
Cast iron borings	16.00 to 17.00
Mixed bor. and turn.	16.00 to 17.00
Cupola cast.	29.00 to 30.00
Mixed yard cast.	27.00 to 28.00
Stove plate	27.00 to 28.00
Small indus. malleable	21.00 to 22.00
Low phos. plate	23.50 to 24.50
Scrap rails	27.00 to 28.00
Rails 3 ft & under	32.00 to 33.00
RR. steel wheels	28.00 to 29.00
RR. coil & leaf spgs.	28.00 to 29.00
RR. knuckles & coup.	28.00 to 29.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$22.50 to $23.00
No. 2 hvy. melting	18.00 to 18.50
No. 1 bundles	22.50 to 23.00
No. 2 bundles	16.00 to 16.50
No. 1 busheling	22.50 to 23.00
Drop forge flashings	22.50 to 23.00
Mach. shop turn.	12.50 to 13.00
Shoveling turn.	18.00 to 18.50
Steel axle turn.	19.50 to 20.00
Cast iron borings	18.00 to 18.50
Mixed bor. & turn.	18.00 to 18.50
Low phos. 2 ft and under	23.50 to 24.00
No. 1 mach. cast	28.00 to 29.00
Malleable	25.00 to 26.00
RR. cast.	28.00 to 29.00
Railroad grate bars	20.00 to 21.00
Stove plate	20.00 to 21.00
RR. hvy. melting	23.50 to 24.00
Rails 3 ft and under	32.00 to 33.00
Rails 18 in. and under	33.00 to 34.00

SAN FRANCISCO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	18.00
No. 1 bales	16.00
No. 2 bales	16.00
No. 3 bales	13.00
Mach. shop turn.	12.00
Elec. fur. 1 ft under	30.00
No. 1 cupola cast.	$20.00 to 25.00
RR. hvy. melting	20.00
Rails	23.00

LOS ANGELES

Per gross ton delivered to consumer:

No. 1 hvy. melting	$20.00
No. 2 hvy. melting	18.00
No. 1 bales	16.00
No. 2 bales	16.00
No. 3 bales	13.00
Mach. shop turn.	12.00
Elec. fur. 1 ft under	30.00
No. 1 cupola cast.	$24.00 to 26.00
RR. hvy. melting	20.00

SEATTLE

Per gross ton delivered to consumer:

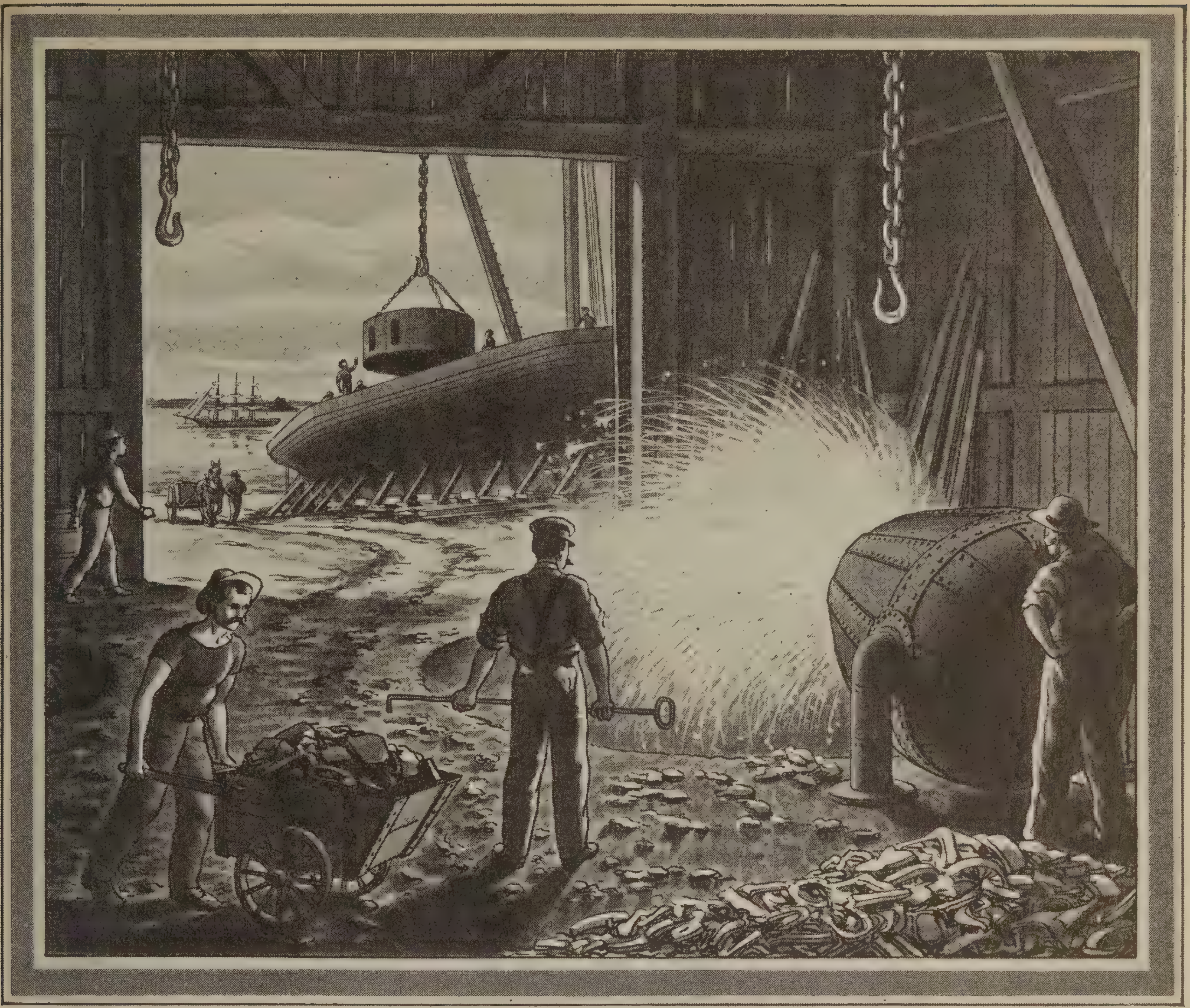
No. 1 & No. 2 hvy melt	$20.00
No. 1 & No. 2 bales	16.00
No. 3 bales	13.00
Elec. fur. 1 ft and under	30.00
No. 1 cupola cast.	$28.00 to 30.00
RR. hvy. melting	20.00

HAMILTON, ONT.

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point:

Heavy melting	$23.00*
No. 1 bundles	23.00*
No. 2 bundles	22.50*
Mechnical bundles	21.00*
Mixed steel scrap	19.00*
Mixed borings and turnings	17.00*
Rails, remelting	23.00*
Rails, rerolling	26.00*
Bushelings	17.50*
Bushelings, new fact, prop'd	21.00*
Bushelings, new fact, unprop'd	16.00*
Short steel turnings	17.00*
No. 1 cast.	$48.00 to 50.00
No. 2 cast.	44.00 to 45.00

*Ceiling Price.



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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices . .

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

	May 17, 1949	May 10, 1949	Apr. 19, 1949	May 18, 1948
Flat-Rolled Steel: (cents per pound)				
Hot-rolled sheets	3.25	3.25	3.25	2.775
Cold-rolled sheets	4.00	4.00	4.00	3.495
Galvanized sheets (10 ga)	4.40	4.40	4.40	3.913
Hot-rolled strip	3.25	3.25	3.25	2.775
Cold-rolled strip	4.038	4.038	4.038	3.535
Plates	3.40	3.40	3.42	2.93
Plates wrought iron	7.85	7.85	7.85	7.25
Stains C-R strip (No. 302)	33.25	33.25	33.25	30.50
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes	$7.75	$7.75	$7.75	$6.70
Tinplate, electro (0.50 lb)	6.70	6.70	6.70	5.90
Special coated mfg. ternes	6.65	6.65	6.65	5.80
Bars and Shapes: (cents per pound)				
Merchant bars	3.35	3.35	3.35	2.875
Cold-finished bars	3.995	3.995	3.995	3.483
Alloy bars	3.75	3.75	3.75	3.213
Structural shapes	3.25	3.25	3.25	2.767
Stainless bars (No. 302)	28.50	28.50	28.50	26.00
Wrought iron bars	9.50	9.50	9.50	8.65
Wire: (cents per pound)				
Bright wire	4.15	4.15	4.15	3.608
Rails: (dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$2.725
Light rails	3.55	3.55	3.55	3.05
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$45.00
Slabs, rerolling	52.00	52.00	52.00	45.00
Forging billets	61.00	61.00	61.00	54.00
Alloy blooms, billets, slabs	63.00	63.00	63.00	66.00
Wire rod and Skelp: (cents per pound)				
Wire rods	3.40	3.40	3.40	3.133
Skelp	3.25	3.25	3.25	2.888

Pig Iron: (per gross ton)	May 17, 1949	May 10, 1949	Apr. 19, 1949	May 18, 1948
No. 2, foundry, Phila.	$50.56	$50.56	$50.65	$44.74
No. 2, Valley furnace	46.50	46.50	46.50	39.50
No. 2, Southern Cin'ti*	45.47	45.47	49.47	45.47
No. 2, Birmingham	39.38	39.38	43.38	39.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	39.00
Basic del'd Philadelphia*	49.74	49.74	49.81	44.24
Basic, Valley furnace	46.00	46.00	46.00	39.00
Malleable, Chicago†	46.50	46.50	46.50	39.50
Malleable, Valley	46.50	46.50	46.50	39.50
Charcoal, Chicago	73.78	73.78	73.78	62.55
Ferromanganese‡	173.40	173.40	173.40	145.00

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† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy page.

* Does not include interim increase on total freight charges, effective Jan. 11, 1949.

	May 17, 1949	May 10, 1949	Apr. 19, 1949	May 18, 1948
Scrap (per gross ton)				
Heavy melt'g steel, P'gh.	$22.75	$22.75	$24.75	$40.25
Heavy melt'g steel, Phila.	22.00	22.00	22.00	42.50
Heavy melt'g steel, Ch'go	23.50	23.50	21.50	39.25
No. 1, hy. comp. sh't, Det.	16.75	16.75	16.75	35.50
Low phos. Young'n	24.75	24.75	24.75	45.25
No. 1, cast, Pittsburgh	27.75	27.75	33.50	64.00
No. 1, cast, Philadelphia	28.00	28.00	28.00	67.00
No. 1, cast, Chicago	28.00	28.00	29.50	73.50
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	*$14.25*	$14.50	$14.50	$12.50
Foundry coke, prompt	*$16.25*	16.50	16.50	14.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	18.00	18.00	21.50	21.50
Copper, Lake Conn.	18.625	18.625	23.625	21.625
Tin, Grade A, New York	$1.03	$1.03	$1.03	94.00
Zinc, East St. Louis	12.00	12.00	13.00	12.00
Lead, St. Louis	13.85	13.85	14.80	17.30
Aluminum, virgin	17.00	17.00	17.00	15.00
Nickel, electrolytic	42.93	42.93	42.93	36.56
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	38.50	38.50	38.50	33.00

Composite Prices . .

Starting with the issue of May 12, 1949 the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive, see p. 139 of May 12, 1949 issue. The composite under the old method this week would have been 3.74583¢ per lb.

	FINISHED STEEL (Base Price)	PIG IRON	SCRAP STEEL
May 17, 1949	3.705¢ per lb.	$45.91 per gross ton	$22.75 per gross ton
One week ago	3.705¢ per lb.	$45.91 per gross ton	$22.75 per gross ton
One month ago	3.708¢ per lb.	$46.59 per gross ton	$22.75 per gross ton
One year ago	3.211¢ per lb.	$40.51 per gross ton	$40.66 per gross ton

	FINISHED STEEL HIGH		LOW		PIG IRON HIGH		LOW		SCRAP STEEL HIGH		LOW	
1949	3.720¢	Jan. 1	3.705¢	May 3	$46.82	Jan. 4	$45.91	May 10	$43.00	Jan. 1	$22.75	Apr. 19
1948	3.721¢	July 27	3.193¢	Jan. 1	46.91	Oct. 12	39.58	Jan. 6	43.16	July 27	39.75	Mar. 9
1947	3.193¢	July 29	2.848¢	Jan. 1	37.98	Dec. 30	30.14	Jan. 7	42.58	Oct. 28	29.50	May 20
1946	2.848¢	Dec. 31	2.464¢	Jan. 1	30.14	Dec. 10	25.37	Jan. 1	31.17	Dec. 24	19.17	Jan. 1
1945	2.464¢	May 29	2.396¢	Jan. 1	25.37	Oct. 23	23.61	Jan. 2	19.17	Jan. 2	18.92	May 22
1944	2.396¢		2.396¢		$23.61		$23.61		19.17	Jan. 11	15.76	Oct. 24
1943	2.396¢		2.396¢		23.61		23.61		$19.17		$19.17	
1942	2.396¢		2.396¢		23.61		23.61		19.17		19.17	
1941	2.396¢		2.396¢		$23.61	Mar. 20	$23.45	Jan. 2	$22.00	Jan. 7	$19.17	Apr. 10
1940	2.30467¢	Jan. 2	2.24107¢	Apr. 16	23.45	Dec. 23	22.61	Jan. 2	21.83	Dec. 30	16.04	Apr. 9
1939	2.35367¢	Jan. 3	2.26689¢	May 16	22.61	Sept. 19	20.61	Sept. 12	22.50	Oct. 3	14.08	May 16
1938	2.58414¢	Jan. 4	2.27207¢	Oct. 18	23.25	June 21	19.61	July 6	15.00	Nov. 22	11.00	June 7
1937	2.58414¢	Mar. 9	2.32263¢	Jan. 4	23.25	Mar. 9	20.25	Feb. 16	21.92	Mar. 30	12.67	June 9
1936	2.32263¢	Dec. 28	2.05200¢	Mar. 10	19.74	Nov. 24	18.73	Aug. 11	17.75	Dec. 21	12.67	June 8
1935	2.07642¢	Oct. 1	2.06492¢	Jan. 8	18.84	Nov. 5	17.83	May 14	13.42	Dec. 10	10.33	Apr. 29
1934	2.15367¢	Apr. 24	1.95757¢	Jan. 2	17.90	May 1	16.90	Jan. 27	13.00	Mar. 13	9.50	Sept. 25
1933	1.95578¢	Oct. 3	1.75836¢	May 2	16.90	Dec. 5	13.56	Jan. 3	12.25	Aug. 8	6.75	Jan. 3
1932	1.89196¢	July 5	1.83901¢	Mar. 1	14.81	Jan. 5	13.56	Dec. 6	8.50	Jan. 12	6.43	July 5
1931	1.99626¢	Jan. 13	1.86586¢	Dec. 29	15.90	Jan. 6	14.79	Dec. 15	11.33	Jan. 6	8.50	Dec. 29
1929	2.31773¢	May 28	2.26498¢	Oct. 29	18.71	May 14	18.21	Dec. 17	17.58	Jan. 29	14.08	Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

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Iron and Steel Prices . . .

Steel prices shown here are f.o.b. producing points in cents per pound unless otherwise indicated. Extras apply. (1) Widths up to 12-in. inclusive. (2) 0.25 carbon and less. (3) Cokes, 1.25 lb, deduct 25¢ per base box. (4) 18 gage and heavier. (5) For straight length material only from producers to fabricators. (6) Also shafting. For quantities of 40,000 lb and over. (7) Carload lot in manufacturing trade. (8) Hollowware enameling, gages 29 to 31 only. (9) Produced to dimensional tolerances in AISI Manual Sec. 6. (10) Slab prices subject to negotiation in most cases. (11) San Francisco only. (12) Los Angeles only. (13) San Francisco and Los Angeles only. (14) Seattle only. (15) Seattle and Los Angeles only.

PRODUCTS	Base prices at producing points apply to the sizes and grades produced in these areas														
	Pitts-burgh	Chicago	Gary	Cleve-land	Birm-ingham	Buffalo	Youngs-town	Spar-rows Point	Granite City	Middle-town, Ohio		Detroit	Johns-town	Seattle, S. Frisco, LosAngeles	Fontana
INGOTS Carbon forging	$50.00														
Alloy	$51.00						(per net ton)								
BILLETS, BLOOMS, SLABS Carbon, rerolling[10]	$52.00				$52.00	$52.00	(per net ton)						$52.00		
Carbon forging billets	$61.00	$61.00	$61.00	$61.00	$61.00	$61.00	(per net ton)						$61.00		
Alloy	$63.00	$63.00				$63.00	(Bethlehem, Canton, Massillon = $63.00) (per net ton)								
PIPE SKELP	3.25						3.25				Warren = 3.25				
WIRE RODS	3.40	3.40		3.40	3.40		3.40	3.50			Worcester 3.70		3.40	4.05[11] 4.20[12]	
SHEETS Hot-rolled[4]	3.25	3.25	3.25	3.25	3.25	3.25 (Consho	3.25 hocken,	3.25 Pa. 3.75)		Warren, Ashland = 3.25		3.45		3.95[13]	4.15
Cold-rolled	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.20	4.00	Warren 4.00	4.20		Pittsburg, Cal. 4.95	
Galvanized (10 gage)	4.40	4.40	4.40		4.40			4.40	Canton =4.40	4.40	Ashland =4.40			5.15[13]	
Enameling (12 gage)	4.40	4.40	4.40	4.40			4.40		4.60	4.40		4.70			
Long ternes (10 gage)	4.80		4.80							4.80					
STRIP Hot-rolled[1]	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25		3.25	Warren = 3.25	3.45		4.00 to 4.25	4.65
Cold-rolled[2]	4.00	4.15		4.00		4.00	4.00	4.00		New Haven 4.50 Warren = 4.00 to 4.25		4.20 to 4.50			5.55
TINPLATE Cokes, 1.50 lb.[3] base box	$7.75	$7.75	$7.75		$7.85			$7.85	$7.95	Warren, Ohio =$7.75				Pittsburg, Cal. =$8.50	
Electrolytic 0.25, 0.50, 0.75 lb. box	Deduct $1.30, $1.05 and 75¢ respectively from 1.50 lb. coke base box price														
TERNES MFG., special coated	Deduct $1.10 from 1.50 lb. coke base box price														
BLACKPLATE CANMAKING 55 to 128 lb.	Deduct $2.00 from 1.50 lb. coke base box price														
BLACKPLATE, h.e., 29 ga.[8]	5.30	5.30	5.30					5.40		Warren, Ohio =5.30					
BARS Carbon Steel	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35		3.35	Canton =3.35	3.55	3.35	4.05	4.00
Reinforcing (billet)[5]	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35			Canton =3.35		3.35	4.05 to 4.10	4.00
Cold-finished[6]	3.95 to 4.00	4.00	4.00	4.00		4.00	4.00					4.30			
Alloy, hot-rolled	3.75	3.75	3.75			3.75	3.75	Bethlehem, Canton, Massillon=3.75				4.05	3.75	4.80[12]	4.75
Alloy cold-drawn	4.65	4.65	4.65	4.65		4.65	4.65	Massillon=4.65			Worcester 4.95				
PLATE Carbon steel[9]	3.40	3.40	3.40	3.40	3.40 Cons	3.45 hohocken	3.40 =3.55	3.45 Coatesville=3.50, Claymont=3.65 Geneva=3.40, Harrisburg=3.95				3.65	3.45	4.30[14]	4.35
Floor plates	4.55	4.55		4.55				Conshohocken=4.55							
Alloy	4.40	4.40							Coatesville=4.50						
SHAPES, Structural	3.25	3.25	3.25		3.25	3.30	Bethlehem=3.30, Geneva, Utah=3.25						3.30	3.80 to 3.90[14]	3.80
MANUFACTURERS' WIRE[7] Bright	4.15	4.15		4.15	4.15		4.15	4.25	Duluth=4.15, Worcester=4.45				4.15	5.15[11]	
Spring (high carbon)	5.20	5.20		5.20				5.30	Worcester=5.50 New Haven, Trenton=5.50				5.20	Duluth= 5.20-6.15	
PILING, Steel sheet	4.05	4.05				4.05									

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	Chromium Nickel							Straight Chromium		
	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	12.75	13.50	15.00	15.50	22.75	18.25	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	24.50	26.75	15.00	18.50	15.25
Forg. discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	36.50	41.00	24.50	25.00	25.00
Billets, forging	24.25	24.25	26.25	25.50	39.00	29.00	32.75	19.50	20.00	20.00
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	34.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50-27.00	26.50
Sheets	37.50	37.50	39.50	39.50	53.00	45.50	50.00	33.00	33.50	35.50
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	34.50	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50	33.00	36.50	35.00	55.00	44.50	48.50	27.00	33.50	27.50

ELECTRODES

Cents per lb. f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
Carbon		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢

High-carbon-chromium	52¢
Oil hardened manganese	29¢
Special carbon	26.5¢
Extra carbon	22¢
Regular carbon	19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

ELECTRICAL SHEETS

24 gage, HR cut lengths, f.o.b. mill

		Cents per lb
Armature	...	5.45
Electrical	...	5.95
Motor	...	6.70
Dynamo	...	7.50
Transformer 72	...	8.05
Transformer 65	...	8.60
Transformer 58	...	9.30
Transformer 52	...	10.10

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb.	$3.20†
Joint bars, 100 lb	4.25
Light rails (from billets) per 100 lb	3.55

	Base Price cents per lb
Track spikes	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburg, Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

*Seattle, add 30¢.

†CF&I, $3.30.

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add 0.30¢.

CLAD STEEL

Base prices, cents per pound

Stainless clad	Plate	Sheet
No. 304, 20 pct, f.o.b.		
Coatesville, Pa.	*26.50	
Washington, Pa.	*26.50	*22.50
Claymont, Del.	*26.50	
Conshohocken, Pa.		*22.50
Nickel-clad		
10 pct f.o.b. Coatesville, Pa.	27.50	
Inconel-clad		
10 pct, f.o.b. Coatesville.	36.00	
Monel-clad		
10 pct, f.o.b. Coatesville.	29.00	
Aluminized steel sheets		
Hot dip, f.o.b. Butler, Pa.		7.75

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* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column	Pittsburg, Calif.
Standard & coated nails*	103	123
Galvanized nails*	103	123
Woven wire fence†	109	132
Fence posts, carloads††	114	...
Single loop bale ties	106	130
Galvanized barbed wire**	123	143
Twisted barbless wire	123	...

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* Pgh., Chi., Duluth; Worcester, 6 columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth only.

	Base per 100 lb	Pittsburg, Calif.
Annealed fence wire‡	$4.80	$5.75
Annealed, galv. fencing‡	5.25	6.20
Cut nails, carloads‡‡	6.75	...

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‡ Add 30¢ at Worcester; 10¢ at Sparrows Pt.

‡‡ Less 20¢ to jobbers.

HIGH STRENGTH, LOW ALLOY STEELS

Mill base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dyn-alloy	HI Steel	Mayari R	Otis-coloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic, Sharon*	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes, Sharon*
Plates	5.20	5.20	5.20	5.30	5.20	5.30	5.20	5.20	5.45
Sheets									
Hot-rolled	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	5.15
Cold-rolled	6.05	6.05	6.05	.....	6.05	6.05	6.05	6.05	6.25
Galvanized	.....	6.75	.....	.....	.....	6.75	.....	.....	.....
Strip									
Hot-rolled	4.95	4.95	4.95	....	4.95	4.95	4.95	4.95	5.15
Cold-rolled	.....	.....	6.05	.....	.....	6.05	6.05	6.05	6.25
Shapes	.....	4.95	.....	.....	4.95	5.05	4.95	4.95	.....
Beams	.....	4.95	.....	.....	.....	.....	.....	.....	.....
Bars									
Hot-rolled	5.10	5.10	5.10	.....	5.10	5.10	5.10	5.10	5.30
Bar shapes	.....	5.10	.....	.....	5.10	5.10	5.10	5.10	.....

*Sheets and strip.

PIPE AND TUBING

Base discounts, f.o.b. mills,
Base price, $200.00 per net ton.

STANDARD, THREADED AND COUPLED

Steel, buttweld	Black	Galv.
½-in.	43 to 41	25½ to 23½
¾-in.	46 to 44	29½ to 27½
1-in.	48½ to 46½	32½ to 30½
1¼-in.	49 to 47	33 to 31
1½-in.	49½ to 47½	33½ to 31½
2-in.	50 to 48	34 to 32
2½ to 3-in.	50½ to 48½	34½ to 32½
Steel, lapweld		
2-in.	39½	25 to 23
2½ to 3-in.	43½ to 42½	27 to 26
3½ to 6-in.	46½ to 42½	30 to 26
Steel, seamless		
2-in.	38½ to 27	22 to 10½
2½ to 3-in.	41½ to 32½	25 to 16
3½ to 6-in.	43½ to 38½	27 to 22
Wrought Iron, buttweld		
½-in.	+20½	+47
¾-in.	+10½	+36
1 & 1¼ in.	+ 4½	+27
2-in.	— 1½	+23½
3-in.	— 2	+23
Wrought Iron, lapweld		
2-in.	+ 7½	+31
2½ to 3½-in.	+ 5	+26½
4-in.	list	+20½
4½ to 8-in.	+ 2	+22

EXTRA STRONG, PLAIN ENDS

Steel, buttweld		
½-in.	42 to 40	26 to 24
¾-in.	46 to 44	30 to 28
1-in.	48 to 46	33 to 31
1¼-in.	48½ to 46½	33½ to 31½
1½-in.	49 to 47	34 to 32
2-in.	49½ to 47½	34½ to 33½
2½ to 3-in.	50 to 48	35 to 33
Steel, lapweld		
2-in.	39½ to 38½	24 to 23
2½ to 3-in.	44½ to 42½	29 to 27
3½ to 6-in.	48 to 44	32½ to 30½
Steel, seamless		
2-in.	37½ to 32½	22 to 17
2½ to 3-in.	41½ to 36½	26 to 22
3½ to 6-in.	45	29½
Wrought Iron, buttweld		
½-in.	+16	+40
¾-in.	+ 9½	+34
1 to 2-in.	— 1½	+23
Wrought Iron, lapweld		
2-in.	+ 4½	+27½
2½ to 4-in.	— 5	+16
4½ to 6-in.	— 1	+20½

For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut length 4 to 24 ft inclusive.

OD in in.	Gage BWG	Seamless H.R.	Seamless C.R.	Electric Weld H.R.	Electric Weld C.D.
2	13	$19.18	$22.56	$18.60	$21.89
2½	12	25.79	30.33	25.02	29.41
3	12	28.68	33.76	27.82	32.74
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

	Per net ton
6 to 24-in., del'd Chicago	$95.70
6 to 24-in., del'd N. Y.	$92.50 to 97.40
6 to 24-in., Birmingham	82.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angéles, for all rail shipment; rail and water shipment less	109.30

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. & shorter	34
All diam, longer than 6 in.	30
Lag, all diam over 6 in. longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifinished Hexagon Nuts

	USS	SAE
7/16 in. and smaller	..	41
½ in. and smaller	38	..
½ in. through 1 in.	..	39
9/16 in. through 1 in.	37	..
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	..

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

	(½ in. and larger) *Base per 100 lb*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

	(7/16 in. and smaller) *Pct off List*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	*Pct Off List*
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill.

Effective CaF, Content:	*Base price per net ton*
70% or more	$37.00
60% or less	34.00

LAKE SUPERIOR ORES

(51.50% *Fe, Natural Content, Delivered Lower Lake Ports*)

	Per Gross Ton
Old range, bessemer	$7.60
Old range, nonbessemer	7.45
Mesabi, bessemer	7.35
Mesabi, nonbessemer	7.20
High phosphorus	7.20

After Dec. 31, 1948, increases or decreases in Upper Lake freight, dock and handling charges and taxes thereon to be for the buyers' account.

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	7.9¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	31.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8%+ Fe	90.0¢ to $1.75
Aluminum	30.00 to 31.00¢
Antimony	51.17¢
Brass, 10 ton lots	22.75 to 25.75¢
Copper, electrolytic	28.125¢
Copper, reduced	28.00¢
Cadmium	$2.40
Chromium, electrolytic, 99% min.	$3.50
Lead	21.65¢
Manganese	55.00 to 60.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	66.00¢
Nickel, spherical, minus 30 mesh, unannealed	68.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.00¢
Tin	$1.25
Tungsten, 99%	$2.90
Zinc, 10 ton lots	14.75 to 16.25¢

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.00 to $14.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.00 to $16.50
Foundry, Byproduct	
Buffalo, del'd	$22.95
Chicago, f.o.b.	20.40
Detroit, f.o.b.	19.40
New England, del'd	22.70
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	20.45
Swedeland, Pa., f.o.b.	20.40
Painesville, Ohio, f.o.b.	20.90
Erie, del'd	$21.50 to 23.50
Cleveland, del'd	22.45
Cincinnati, del'd	21.50
St. Paul, f.o.b.	23.50
St. Louis, del'd	20.98
Birmingham, del'd	18.66

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

	Carloads, Per 1000
First quality, Pa., Md., Ky., Mo., Ill. (except Salina, Pa., add $5)	$80.00
No. 1 Ohio	74.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	74.00
No. 2 Ohio	66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	11.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$80.00
Childs, Pa.	84.00
Hays, Pa.	85.00
Chicago District	89.00
Western, Utah and Calif.	95.00
Super Duty, Hays, Pa., Athens, Tex.	85.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa.	16.00
Silica cement, net ton, bulk, Ensley, Ala.	15.00
Silica cement, net ton, bulk, Chicago District	14.75
Silica cement, net ton, bulk, Utah and Calif.	21.00

Chrome Brick

	Per Net Ton
Standard chemically bonded, Balt., Chester	$69.00

Magnesite Brick

Standard, Balt. and Chester	$91.00
Chemically bonded, Balt. and Chester	80.00

Grain Magnesite

	Std. ⅜-in. grains
Domestic, f.o.b. Balt. and Chester, in bulk, fines removed	$56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines	$30.50 to 31.00
in sacks with fines	35.00 to 35.50

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk. Midwest, add 10¢; Missouri Valley, add 20¢	$12.2

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb.
(Metropolitan area delivery, add 15¢ to base price except Cincinnati and New Orleans (*), add 10¢; New York, add 20¢.)

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50, Ann.
Baltimore	5.31	6.21-6.41	6.95-7.11	5.37	....	5.56	5.36	5.42	6.16	....	9.60-10.10	....	....
Birmingham	5.05	....	6.45	5.05	6.68	5.25	5.00	5.00	6.68	....	....	....	....
Boston	5.55	6.45-6.75	7.11-7.61	5.65-5.95	6.75	5.80	5.42	5.52	6.27	9.67-9.79	10.04-10.07	11.23	11.47
Buffalo	4.85	5.75	7.43-7.57	5.30	7.27	5.35	5.10	5.05-5.15	5.90	9.60-9.70	9.85-9.95	11.15	11.40-11.45
Chicago	4.85	5.75	6.95-7.10	4.85	5.55-6.68	5.10	4.90	4.90	5.70	9.35	9.60	10.80	11.05
Cincinnati*	5.16-5.51	5.84-6.28	6.59-6.93	5.28-5.43	....	5.53-5.85	5.33	5.33-5.48	6.08-6.20	9.74	9.99	11.19	11.44
Cleveland	4.85-5.16	5.75-6.06	6.15-7.46	5.03-5.15	....	5.21-5.54	5.01-5.47	5.01-5.34	5.70-5.97	9.49-9.50	9.74-9.75	10.95	11.19-11.20
Detroit	5.28-5.32	6.07-6.18	7.38-7.58	5.27-5.47	6.27-6.58	5.52-5.57	5.33-5.40	5.33-5.55	6.00-6.10	9.67	9.92	11.11	11.35
Houston	6.70-6.95	....	7.30	6.70	....	6.70	6.20-6.70	6.40-6.65	7.60	10.45	10.40	11.45	11.70
Indianapolis	5.29	6.13	7.44	5.29	7.36	5.54	5.34	5.34	6.14	11.25	11.39	....	....
Los Angeles	6.45-6.65	7.75[19]-7.90[1]	8.05-8.75	6.65	8.35[5]-9.35[5]	6.15	5.95	6.10	7.95[14]	10.95[15]	10.90[15]-14.70	12.45[15]	12.70[15]-16.45
Memphis	5.75-5.80	6.60	7.20	5.80-5.95	6.80	5.95-6.00	5.75	5.75	6.53	....	....	....	....
Milwaukee	5.03	5.93	7.13-7.18	5.03-5.38	6.86	5.28	5.08	5.08	5.88	9.53	9.78	10.98	11.23
New Orleans*	5.95	6.75	....	6.15	....	6.15	5.95	5.95	6.65[6]	....	....	....	....
New York	5.40	6.31-6.46	7.00	5.62-5.72	....	5.70	5.33	5.57	6.36-6.41	9.73	9.98	11.18	11.43
Norfolk	6.00	....	....	6.20	....	6.05	6.05	6.05	7.05	....	....	....	....
Omaha	6.13	....	8.33	6.13	....	6.38	6.18	6.18	6.98	....	....	....	....
Philadelphia	5.15-5.71	6.24-6.46	7.18-7.28	5.44-5.55	6.69	5.38-5.50	5.10-5.55	5.40-5.55	6.19-6.34	9.49-9.50	9.74-9.75	10.95	11.20
Pittsburgh	4.85	5.75[1]	6.95-7.15	5.00	6.00	5.05 5.10	4.90	4.90	5.65	9.35	9.60	10.80	11.05
Portland	6.50[8]-6.90	8.00[1]	8.80-9.10	6.85[8]	....	6.30[8]	6.35[8]	6.35[8]	8.25[14]	10.50[6]	10.10[6]	....	....
Salt Lake City	7.05	8.20	7.90	7.50	....	6.40	6.80	7.10	8.30	....	....	....	....
San Francisco	6.15[8]	7.50[2]	7.90	6.75[8]	8.25[5]	6.35[8]	5.90[8]	5.90[8]	7.55	10.90[15]	10.85[15]	12.40[15]	12.65[15]
Seattle	6.70[4]	8.15[2]	8.80	6.70[4]	....	6.35[4]	6.30[4]	6.20[4]	8.15[14]	....	10.35[15]	....	13.10[15]
St. Louis	5.22-5.37	6.12[1]-6.27	7.32	5.22	6.68-7.54	5.47	5.27	5.27	6.07-6.22	9.72	9.97	11.17	11.42
St. Paul	5.44	6.19-6.34	7.64	5.44	6.82	5.64-6.69	5.49	5.49	6.29	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED:
Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED:
Sheets, 400 to 1499 lb; strip, extras on all quantities bars 1000 lb and over.

ALLOY BARS:
1000 to 1999 lb.

GALVANIZED SHEETS:
450 to 1499 lb.

EXCEPTIONS:
(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb; (18) 1000 to 1499 lb; (19) 1500 to 3499 lb.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do not include 3 pct tax on freight nor the 6 pct increase on total freight charges in the Eastern Zone (5 pct Southern Zone, 4 pct Western Zone), effective Jan. 11, 1949.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malle-able	Besse-mer	Low Phos.
Bethlehem	48.00	.....	.....	.....	.....
Birmingham	38.88	39.38	.....	.....	.....
Buffalo	46.00	46.50	47.00	.....	.....
Chicago	46.00	46.50	46.50	47.00	.....
Cleveland	46.00	46.50	46.50	47.00	51.00
Duluth	46.00	46.50	46.50	47.00	.....
Erie	46.00	46.50	46.50	47.00	.....
Everett	.....	52.50	53.00	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	46.00	46.50	.....	.....	.....
Lone Star, Texas	46.00	46.50†	.....	.....	.....
Neville Island	46.00	46.50	46.50	.....	.....
Geneva, Utah	46.00	46.50	.....	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	46.00	.....	.....	.....	.....
Swedeland	48.00	48.50	49.00	49.50	.....
Toledo	46.00	46.50	46.50	47.00	.....
Troy, N. Y.	.....	.....	.....	.....	54.00
Youngstown	46.00	46.50	46.50	.....	.....

DELIVERED PRICES (BASE GRADES)

Consuming Point	Producing Point	Freight Rate	Basic	No. 2 Foundry	Malle-able	Besse-mer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	52.50	53.00	.....	.....
Boston	Steelton	6.27	54.27	54.77	55.27	55.77	60.27
Brooklyn	Steelton	5.48	.....	53.98	54.48	54.98	59.48
Cincinnati	Birmingham	6.09	44.97	45.47	.....	.....	.....
Jersey City	Steelton	3.67	.....	52.17	52.67	53.17	57.67
Los Angeles	Geneva-Ironton	7.13	53.13	53.63	.....	.....	.....
Mansfield	Cleveland-Toledo	3.03	49.03	49.53	49.53	50.03	54.03
Philadelphia	Bethlehem	2.17	50.17	.....	.....	.....	.....
Philadelphia	Swedeland	1.31	49.31	49.81	50.31	50.81	.....
Philadelphia	Steelton	2.81	50.81	51.31	51.81	52.31	56.81
San Francisco	Geneva-Ironton	7.13	53.13-	53.63-	.....	.....	.....
Seattle	Geneva-Ironton	7.13	53.13-	53.63-	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Gulf Ports	Lone Star, Texas	....	50.50	51.00†			

† Low Phos, Southern Grade

Producing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.01 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio —$59.50; f.o.b. Buffalo, $60.75. Add $1.00 per ton for each additional 0.50 pct Si up to 17 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $66.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, $73.78. High phosphorus charcoal pig iron is not being produced.

Ferromanganese

78-82% Mn, Maximum contract base price, gross ton, lump size.

F.o.b. Birmingham	$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$172
F.o.b. Johnstown, Pa.	$174
F.o.b. Sheridan, Pa.	$172
F.o.b. Etna, Pa.	$175

$2.00 for each 1% above 82% Mn; penalty, $2.15 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.45
Ton lots	12.05
Less ton lots	12.95

Spiegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$64.00	$65.00
Pgh. or Chicago	65.00	66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, packed	35.5
Ton lots	37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Si	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	8.95
Ton lots	10.60
Briquet, contract basis, carlots, bulk delivered, per lb of briquet	10.30
Ton lots	11.90
Less ton lots	12.80

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, $80.00; $78.50 f.o.b. Niagara Falls; Electric furnace silvery iron is not being produced at Jackson. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	20.70
97% Si, 1% Fe	21.10

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.

Carload, bulk	6.30
Ton lots	7.90
Less ton lots	8.80

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size, bulk, in carloads, delivered.

25% Si	18.50
50% Si	11.30
75% Si	13.50
85% Si	14.65
90-95% Si	16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered. (65-72% Cr, 2% max. Si)

0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload, bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, cents per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% max. C	1.09
0.50% max. C	1.05
9.00% min. C	1.04

Calcium—Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25%Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Ton lots and carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained, V.	
Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound contained V_2O_5	$1.20
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	$2.90
Less ton lots	2.95
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo.	$1.10
Calcium molybdate, 45-50%, f.o.b. Langeloth, Pa., per pound contained Mo.	96¢
Molybdenum oxide briquets, f.o.b. Langeloth, Pa.; bags, f.o.b. Wash., Pa., per pound contained Mo.	95¢
Ferrotitanium, 40%, regular grade, 10% C max., f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.28
Ferrotitanium, 25%, low carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, ton lots, per lb contained Ti	$1.40
Less ton lots	1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed east of Mississippi and north of Baltimore, carloads, per net ton	$160.00
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per pound of alloy.	
Carload, bulk	6.60¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	7.40¢
Ton lots	8.80¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk	11.00¢
Ton lots, packed	11.25¢
Less ton lots	11.75¢

Boron Agents

Contract prices per lb. of alloy, del.

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lot	$1.20
F.o.b. Wash., Pa.; 100 lb. and over	
10 to 14% B.	.75
14 to 19% B.	1.20
19% min. B.	1.50
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered.	
Ton lots	$1.67
Less ton lots	1.79
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcaz, contract basis, delivered.	
Ton lots	45.00¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	93¢
No. 6	63¢
No. 79	45¢
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y.; freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.	
Ton lots, per pound	8.625¢
Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$6.25

(CONTINUED FROM PAGE 127)

• **George L. Staudt** has been appointed advertising and sales promotion manager of Harnischfeger Corp., Milwaukee. Mr. Staudt had formerly been director of advertising for Standard Register Co., Dayton.

• **Clyde F. Giegel,** who has served Reliance Electric & Engineering Co., Cleveland, in a number of capacities over a period of years, has joined the Pittsburgh office as a field service engineer. **Albert M. Cherry,** who has served for the past two years in the company's general sales offices in Cleveland, has been transferred to the Rockford, Ill., sales office. **Byron O. Lutman** has been appointed field sales application engineer in the Detroit office; **Robert C. Suttle,** in the Cincinnati office; **William H. Chambers,** in the Syracuse office; **Robert L. Potter,** Pittsburgh office; **William B. Maley,** New York office; **Eugene H. Sowers,** Philadelphia office; **J. Robert Zahn,** Cleveland office; **Robert Magnetti,** Chicago office and **Robert B. Reed,** Birmingham office.

• **John Burkhardt** has been appointed traffic manager of the Hewitt Restfoam division of Hewitt-Robins, Inc., Buffalo. Mr. Burkhardt also continues in the same capacity in the Hewitt Rubber division, where he has served for many years. **Thomas P. McNiesh** has been assigned to the Los Angeles territory as sales representative to handle Hewitt mechanical rubber products there. **Hall S. Derkin** has been assigned, in the same capacity, to the Chicago area, with headquarters in that city.

• **John G. Spruhan** has been appointed central division sales manager of the Townsend Co., New Brighton, Pa., with headquarters in Detroit. Mr. Spruhan had been sales manager of the Monarch Governor Co., prior to joining Townsend.

• **George S. Edwards** has been appointed sales engineer for the southern territory of Swenson Evaporator Co., division of the Whiting Corp., with headquarters in Birmingham. Mr. Edwards has served Swenson since 1947.

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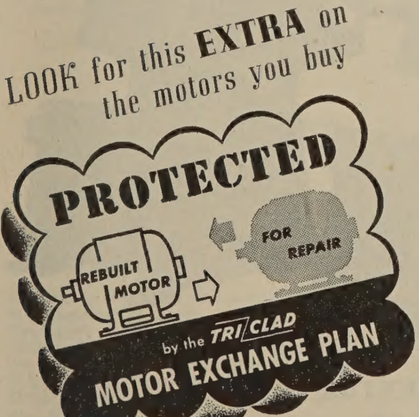
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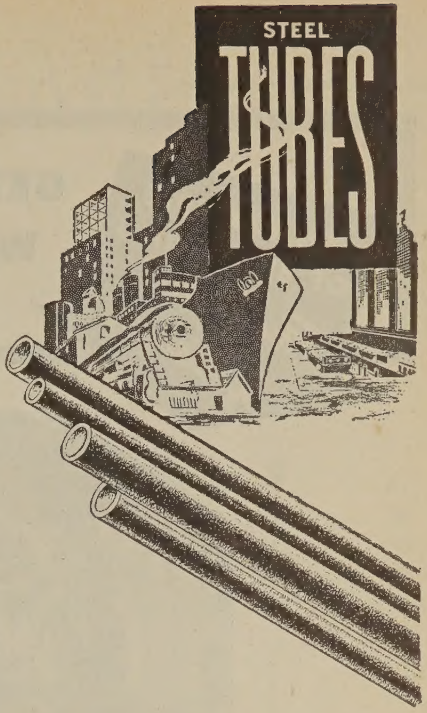

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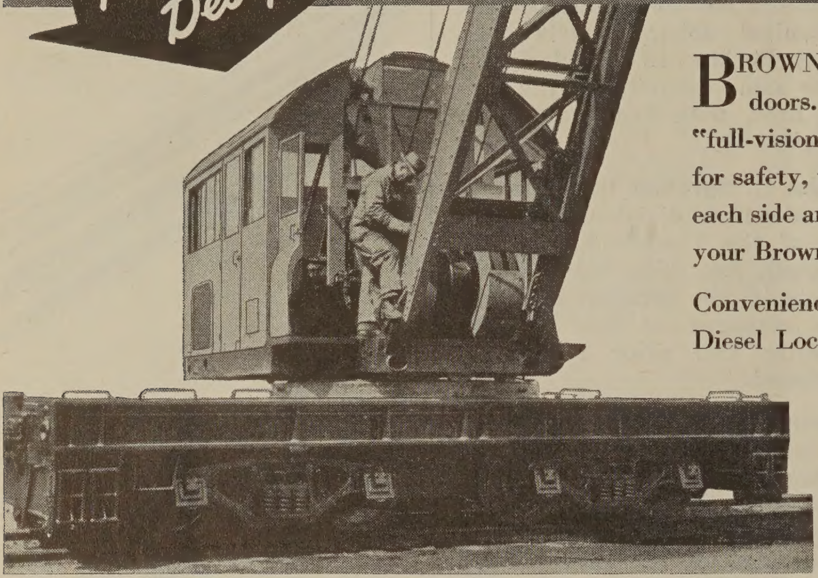

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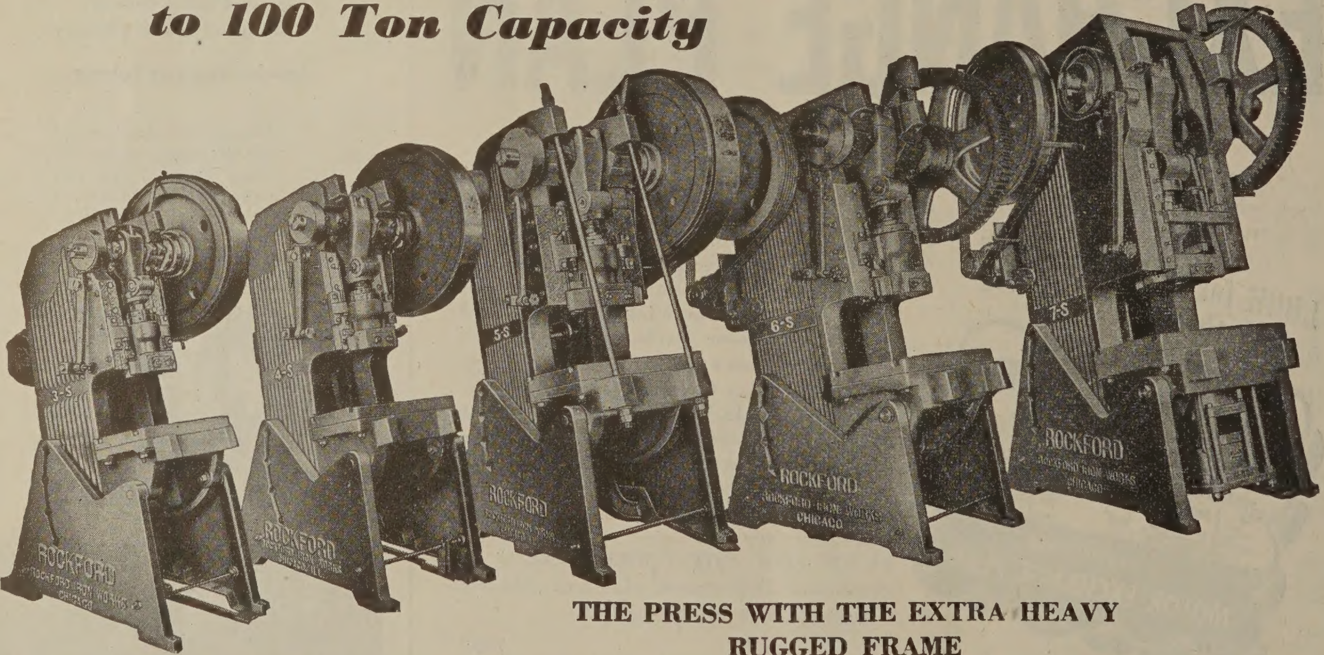

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